

OBG | There's a way

February 5, 2016

### Mr. John Osolin

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### Mr. Raymond Souweha

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RE: Remedial Action for Operable Unit 3 (OU3) – Site Groundwater
Injection Event #2/Post-Injection Monitoring Report
Evor Phillips Leasing Company Superfund Site
Old Bridge Township, Middlesex County, New Jersey (Program Interest #G000004877, EPA
ID #NJD980654222)

FILE: 19726 / 51308

Dear Mr. Osolin and Mr. Souweha:

On behalf of the Evor Phillips Leasing Company Superfund Site Settling Defendants (Group), O'Brien & Gere (OBG) has prepared this in-situ chemical oxidation (ISCO) Injection Event #2/Post-Injection Monitoring Report for the Remedial Action for Operable Unit 3 (OU3) – Site Groundwater at the Evor Phillips Leasing Company (EPLC) Superfund Site (Site) in Old Bridge, New Jersey. A Site Location Map is provided as **Figure 1**, and a Site Plan with well locations is provided as **Figure 2**.

The first ISCO injection event was completed in February/March 2014, followed by four groundwater performance monitoring events in accordance with the EPA-approved Remedial Design Report (RDR) / Remedial Action Work Plan (RAWP). Injections were completed for the two treatment areas (Treatment Area 1 and Treatment Area 2) as identified in the RDR/RAWP. The results were documented in the Injection Event #1/Post-Injection Monitoring Report (OBG, November 2014). The second ISCO injection event was completed June 1-11 2015, followed by four groundwater performance monitoring events in accordance with the 2015 Annual/Baseline Groundwater Monitoring Event Summary and Injection Event #2 Treatment Recommendations Summary (approved by EPA/NJDEP on May 27, 2015). A layout of the ISCO injection point (IP) network for the two treatment areas for both injection events is included as Figure 3. The four groundwater performance monitoring events were completed as follows:

- 1st Post-Injection Event #2 Monitoring Event July 22-23, 2015 (approximately 6 weeks following injections)
- 2<sup>nd</sup> Post-Injection Event #2 Monitoring Event September 15-16, 2015 (approximately 3 months following injections)







- 3<sup>rd</sup> Post-Injection Event #2 Monitoring Event October 15-16, 2015 (approximately 4 months following injections)
- 4th Post-Injection Event #2 Monitoring Event November 11-12, 2015 (approximately 5 months following injections)

The following sections of this letter report present the details of the second round of ISCO injections, post-injection groundwater sampling activities/results, and recommendations for remedial program, outlined as follows:

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- Post-Injection Groundwater Performance Sampling pg. 3
- Recommendations for the Remedial Program pg. 7

### TREATMENT AREA 1 ISCO INJECTIONS

The Event #2 full-scale injections were completed in Treatment Area 1 on June 4-11, 2015. Previous injection testing performed during the 1<sup>st</sup> round of injections in February/March 2014 indicated effective base activated sodium persulfate (BASP) delivery into the subsurface using the injection volumes/dosage and injection point (IP) spacing as described in the Injection Event #1/Post-Injection Monitoring Report (OBG, Nov. 2014). Therefore, Injection Event #2 volumes/dosage and IP spacing remained consistent with those used for Injection Event #1. Reagent volumes of approximately 800 gallons of 5% (50 g/L) persulfate and 3 lbs of 25% sodium hydroxide (NaOH)/lb of sodium persulfate were injected into each IP at a targeted 5-foot depth interval (refer to Figure 3 for specific injection depths at each IP). Treatment Area 1 consisted of 52 IPs (one injection interval at each IP), consistent with Injection Event #1.

Temporary IPs were installed using direct-push methods by Environmental Probing Investigations, Inc. (EPI), an NJDEP licensed driller. A stainless steel temporary well screen sealed within a steel sheath was advanced to the appropriate injection interval. The outer steel sheath was retracted, exposing the inner well screen. BASP was pumped from the surface, through the drilling rods and into the subsurface. Upon completion of each IP, the tooling was removed and decontaminated. Each borehole was sealed with bentonite.

Injections were generally completed from the south of the treatment area to the north, alternating between points to mitigate the potential for groundwater / solution surfacing ("daylighting"). BASP pumping rates were sustained at 4-8 gallons per minute (gpm) with low back-pressure (0-40 pounds per square inch [psi]), and no surfacing of BASP was observed throughout the injections in Treatment Area 1, indicating effective solution delivery to the subsurface. Injections for each IP required approximately 2-3 hours to complete. **Attachment 1** provides the injection schedule/volumes for each IP in Treatment Area 1.

At various times during the injections, monitoring wells ISCO-MW-2, ISCO-MW-3, ISCO-MW-7, ISCO-MW-8, ISCO-MW-9, IW1-BT-2, and ISCO-MW-4 (downgradient) in Treatment Area 1 were monitored for field parameters (i.e., pH, conductivity, etc.) and persulfate. **Attachment 1** provides the process monitoring results for these wells during and following the Treatment Area 1 injections, including the pH and persulfate trends.

Elevated pH and persulfate readings were exhibited in the monitoring wells within Treatment Area 1 during and/or following injections. The elevated pH/persulfate readings were less pronounced in ISCO-MW-9, likely due to the location of this well near the upgradient perimeter of the treatment area. The groundwater process monitoring results for Treatment Area 1 indicate that the oxidant was effectively distributed throughout the



treatment area. No elevated pH and persulfate readings were observed in the downgradient well (ISCO-MW-4), indicating that the injected oxidant remained within the treatment area.

### TREATMENT AREA 2 ISCO INJECTIONS

The Event #2 full-scale injections were completed in Treatment Area 2 on June 1-5, 2015. Consistent with the Annual/Baseline Groundwater Monitoring Event Summary and Injection Event #2 Treatment Recommendations Summary (approved by EPA/NJDEP on May 27, 2015), thirteen (13) IPs with a total of thirty-nine (39) 5-foot injection intervals were completed in the vicinity of ISCO-MW-5 within Treatment Area 2 (a reduction from forty-two [42] IPs completed during Injection Event #1). Consistent with Treatment Area 1, reagent volumes of approximately 800 gallons of 5% (50 g/L) persulfate and 3 lbs of 25% sodium hydroxide (NaOH)/lb of sodium persulfate were injected into each IP at the targeted 5-foot depth intervals (refer to Figure 3 for specific injection depths at each IP).

Temporary IPs were installed using direct-push methods by EPI. A stainless steel temporary well screen sealed within a steel sheath was advanced to the appropriate injection interval (bottom 5-foot interval initially). The outer steel sheath was retracted, exposing the inner well screen. BASP was pumped from the surface, through the drilling rods and into the subsurface. The same process was repeated for other intervals. Upon completion of each IP (three injection intervals), the tooling was removed and decontaminated. Each borehole was sealed with bentonite.

Injections were generally completed from the west to the east of the limited treatment area. BASP pumping rates were sustained at 4-8 gpm with low/moderate back-pressure (0-40 psi), and no surfacing of BASP was observed throughout the injections in Treatment Area 2, indicating effective solution delivery to the subsurface. The injections at each interval in the IPs were completed in approximately 2-3 hours. **Attachment 2** provides the injection schedule/volumes for each IP in Treatment Area 2.

Consistent with the approved Phase 2 program, monitoring well ISCO-MW-5 in Treatment Area 2 was sampled for field parameters (i.e., pH, conductivity, etc.) and persulfate regularly throughout the ISCO injections. Attachment 2 provides the process monitoring results for ISCO-MW-5 during and following the Treatment Area 2 injections, including the pH and persulfate trends. ISCO-MW-5 exhibited elevated pH/persulfate readings indicating effective oxidant distribution throughout this portion of Treatment Area 2.

### POST-INJECTION GROUNDWATER PERFORMANCE SAMPLING

### **SAMPLING ACTIVITIES**

In accordance with the Annual/Baseline Groundwater Monitoring Event Summary and Injection Event #2 Treatment Recommendations Summary (approved by EPA/NJDEP on May 27, 2015), four performance groundwater monitoring events were completed at approximately 6 weeks (1.5 months), 12 weeks (3 months), 4 months, and 5 months following the completion of the second round of ISCO injections. Groundwater samples were collected at ten (10) wells (ISCO-MW-2, ISCO-MW-3, ISCO-MW-4, ISCO-MW-5, ISCO-MW-7, ISCO-MW-8, ISCO-MW-9, IW1-BT-2, MW-14S, and MW-10S). Samples were collected from two five-foot intervals within the ten-foot screen interval at MW-14S (refer to the RDR/RAWP). In addition, the remaining Treatment Area 2 wells located in the vicinity of areas that were previously treated during the first round of injections (ISCO-MW-1, ISCO-MW-6, and PZ-1S) and three upgradient wells (MW-5I, MW-11I, and IW-DR-1) were sampled during the 4<sup>th</sup> post-Injection Event #2 groundwater monitoring event (5 months following injections).

Wells were sampled using low-flow sampling methods in accordance with the RDR/RAWP and groundwater samples were collected and submitted to Accutest Laboratories, Inc. of Dayton, New Jersey (New Jersey Certification #12129) for analysis for the following parameters:



- Volatile organic compounds (VOCs) (Target Compound List, SW846 8260)
- Total dissolved solids (SM 2540C)
- Sulfate (EPA 300)
- Metals (total/dissolved chromium, dissolved iron, sodium SW846 6010)

Groundwater low-flow sampling logs from each monitoring event are included as **Attachment 3**.

### RESIDUAL PERSULFATE MEASUREMENTS/ASCORBIC ACID PRESERVATION

As described in the Injection Event #1/Post-Injection Monitoring Report (OBG, November 2014), EPA requested that alternative groundwater sample preservation techniques be incorporated into the post-injection groundwater sampling, citing an EPA Groundwater Issue paper titled "Ground Water Sample Preservation at In-Situ Chemical Oxidation Sites – Recommended Guidelines". The paper indicated the potential for VOC concentrations in groundwater samples collected following the application of ISCO reagents to be biased low, due to the presence of residual oxidant(s) in the samples. To address this potential, the paper recommended the use of field measurements to evaluate the presence/concentrations of residual oxidant(s) in groundwater prior to the collection of groundwater samples for laboratory analysis, and the use of ascorbic acid preservation (in addition to standard hydrochloric acid [HCI] preservation) for the collection of groundwater samples where the presence of residual oxidant(s) is indicated by the field measurements.

Based on EPA's request, as part of the 2<sup>nd</sup> through 4<sup>th</sup> post-Injection Event #1 (2014) monitoring events, five of the ISCO treatment area wells (exhibiting the highest groundwater VOC concentrations based on prior monitoring results) were field-tested for the presence of residual persulfate via peristaltic pump and colorimetric testing kits, consistent with the persulfate field measurement approach used during the injection work. Based on the field testing findings indicating low levels of residual persulfate, groundwater VOC samples were collected during the 3<sup>rd</sup> and 4<sup>th</sup> post-Injection Event #1 monitoring events at the wells using standard preservation (i.e., HCl), with duplicate samples collected using the alternative sample preservation procedure (i.e., ascorbic acid with HCl) for comparison. As presented in the Injection Event #1/Post-Injection Monitoring Report (OBG, November 2014), the groundwater VOC results using the ascorbic acid/HCl preservation method were similar to those obtained using the standard (HCl) preservation method (VOC results obtained using ascorbic acid/HCl preservation were marginally lower than those using standard preservation methods).

Based on EPA/NJDEP comments regarding the Injection Event #1/Post-Injection Monitoring Report (OBG, November 2014), duplicate groundwater samples using ascorbic acid/HCl preservation were also collected at ISCO-MW-2, ISCO-MW-3, ISCO-MW-5, and ISCO-MW-9 during the first post-Injection Event #2 groundwater monitoring event (6 weeks following injections), when residual oxidant concentrations in groundwater may be higher and therefore more pronounced differences in groundwater VOC analysis results may be expected using the two preservation methods. The four wells were field-tested for the presence of residual persulfate using colorimetric testing kits. Approximate persulfate field testing values for the four wells were as follows:

- ISCO-MW-2: 1,000 mg/L
- ISCO-MW-3: 70 mg/L
- ISCO-MW-5: 0-0.7 mg/L
- ISCO-MW-9: 200 mg/L

Based on the above findings, groundwater VOC samples were collected during the 1<sup>st</sup> post-Injection Event #2 monitoring event at the four wells using standard preservation (i.e., HCl), with duplicate samples collected using



the alternative sample preservation procedure (i.e., ascorbic acid with HCl) for comparison. Groundwater samples were collected/preserved in accordance with the RDR/RAWP and the updated SOP016 – Low Stress (Low Flow) Groundwater Purging and Sampling (as submitted to EPA on August 4, 2014) incorporating the use of the ascorbic acid preservation technique. **Table 1** presents the comparative groundwater results for the four wells using the two preservation methods (i.e., HCL preservative and ascorbic acid with HCL preservatives). VOC sampling results for the four wells using both standard (HCl) and ascorbic acid/HCl preservation methods yielded similar results as shown in **Attachment 4**, similar to the findings from the prior comparative groundwater sampling during the post-Injection Event #1 monitoring events.

### **GROUNDWATER SAMPLING RESULTS**

As described above, 10 wells were sampled during the first three post-Injection Event #2 sampling events and 16 wells were sampled during the 4<sup>th</sup> post-Injection Event #2 sampling event. Post-injection groundwater performance monitoring results are presented in **Table 2**. A summary of the 2014 baseline (January/February 2014) groundwater sampling results, 2015 baseline (March 2015) groundwater sampling results, and the four post-Injection Event #2 sampling events results is shown on **Figure 4**, along with updated estimated trichloroethene (TCE) and 1,2-dichloroethane (1,2-DCA) iso-concentration contours based on the latest groundwater results from the November 2015 monitoring event. Data validation results are included as **Attachment 8**, indicating that the groundwater data meet required usability criteria in accordance with the approved Uniform Federal Policy Quality Assurance Project Plan (UFP-QAPP).

A summary of groundwater results for each treatment area well from the post-Injection Event #2 performance groundwater monitoring events are described below and trend graphs are included as **Attachment 5**. The review targets the two VOCs most commonly detected above the New Jersey Ground Water Quality Standards (NJGWQS) at the Site (1,2-DCA and TCE) and looks at the total concentration trends for these two compounds in wells with remaining exceedances of one or both of these compounds:

### Treatment Area 1 (above the silty clay unit)

Several of the wells representing a majority of the Treatment Area 1 foot print continue to exhibit relatively low total VOC concentrations:

- » ISCO-MW-7: The total concentration of 1,2-DCA and TCE was 2 ug/L for Jan. 2014 baseline (prior to ISCO injections); 3.6 ug/L for March 2015 baseline (following Injection Event #1), and; 5.6 ug/L for the final sampling event following Injection Event #2 (November 2015).
- » IW1-BT-2: 1.6 ug/L for Jan. 2014 baseline; 2 ug/L for March 2015 baseline; and 10.4 ug/L final sampling event following injection Event #2 (November 2015). Based on prior monitoring results for IW1-BT-2, the 10.4 ug/L result for the November 2015 monitoring event is thought to be a transient effect from the nearby injection work, and is expected to decline over time (a similar concentration trend was noted following Injection Event #1).
- » ISCO-MW-8: 43.8 ug/L for Jan. 2014 baseline; 6 ug/L for March 2015 baseline; 5.7 ug/L final sampling event following Injection Event #2 (November 2015). This represents an approximate 87% reduction in 1,2-DCA and TCE concentrations from baseline conditions, achieved through the first injection event in February/March 2014 and sustained through November 2015.
- » ISCO-MW-9: 44 ug/L for Jan. 2014 baseline; 12.5 ug/L for March 2015 baseline; 12.6 ug/L For final sampling event following Injection Event #2 (November 2015) This represents an approximate 70% reduction in 1,2-DCA and TCE concentrations from baseline conditions, achieved through the first injection event in February/March 2014 and sustained through November 2015.



- ISCO-MW-2: 1,271.8 ug/L 1,2-DCA and TCE for Jan. 2014 baseline; 842.9 ug/L for March 2015 baseline; 259 ug/L on November 2015. This represents an approximate 80% reduction in 1,2-DCA and TCE concentrations from baseline conditions, achieved through the two injection events. There was a strong initial decrease in concentrations following each injection event, followed by a nominal increase in concentrations. For example, following Injection Event #2, ISCO-MW-2 demonstrated an initial 89% decrease in 1,2-DCA and TCE concentrations (from 842.9 ug/L for March 2015 baseline down to 94.7 ug/L). The concentration then fluctuated between approximately 220 ug/L and 315 ug/L.
- ISCO-MW-3: 54.9 ug/L TCE for Jan. 2014 baseline; 77.1 ug/L for March 2015 baseline; 80.1 ug/L for November 2015. Similar to ISCO-MW-2, there was a decrease in TCE concentrations following the injection work, with a subsequent return to baseline conditions. Cis-1,2-dichloroethene (cis-1,2-DCE) was also detected in the later monitoring events at concentrations just above its respective NJGWQS (70 ug/L).

### Treatment Area 2 (below the silty clay unit)

- Total TCE and 1,2-DCA concentrations in the portions of the treatment area where no further injection work was completed as part of Injection Event #2 (e.g., vicinity of PZ-1S, ISCO-MW-1, and ISCO-MW-6) have remained low (in the range of 2-6 ug/L). The total TCE and 1,2-DCA concentrations for these wells are summarized as follows:
  - » ISCO-MW-1: 44.5 ug/L for Jan. 2014 baseline (prior to ISCO injections); 3.6 ug/L for March 2015 baseline (following Injection Event #1); 3.6 ug/L for the final sampling event in November 2015. This represents an approximate 92% reduction in TCE and 1,2-DCA concentrations achieved through the first injection event in February/March 2014 and sustained through November 2015.
  - » PZ-1S: 2 ug/L for Jan. 2014 baseline; 4.4 ug/L for March 2015 baseline; 3.9 ug/L for the November 2015 event.
  - » ISCO-MW-6: 2 ug/L for Jan. 2014 baseline; 1.8 ug/L for March 2015 baseline; 1.9 ug/L for the November 2015 event.
- A second round of injections was completed in the vicinity of ISCO-MW-5 as described above. ISCO-MW-5 groundwater monitoring results indicated an initial decrease in 1,2-DCA and TCE concentrations (from 198.3 ug/L in the March 2015 baseline, down to 128.6 ug/L in the 1st post- Injection Event #2 groundwater monitoring event in July 2015), followed by a return to approximate pre-injection concentrations (219.6 ug/L) during the final post-injection groundwater monitoring event in November 2015.

### General Observations

- Increased acetone concentrations appear in a number of wells, although not at concentrations that would be of concern relative to its groundwater quality standard (i.e., 6,000 ug/L). The minor acetone concentrations detected are a typical by-product of the ISCO process and are also expected to decrease over time. In addition, acetone was not detected in downgradient wells, which supports that the temporary acetone increases appear to be localized to the treatment areas.
- While there were initial increases in dissolved chromium concentrations, the trend is downward/neutral (e.g., IW1-BT-2 and ISCO-MW-3). Low-level chromium detections have been identified sporadically in the downgradient wells (e.g., approximately 40 ug/L in well MW-10S). However these detections appear to be relatively close to the treatment area and not likely to migrate any significant distance downgradient. Based on post-Injection Event #1 groundwater monitoring results and Post-Injection Event #2 groundwater monitoring results to date, chromium concentrations are expected to continue to decrease over time.



■ Wells located downgradient from the injection areas show no significant migration/mobilization of groundwater constituents from the ISCO treatment areas throughout the ISCO RA program. ISCO-MW-4 and MW-14S have exhibited no 1,2-DCA or TCE concentrations above GWQS. The November 2015 results for MW-10S exhibited small increase in 1,2-DCA concentrations (from 1.2 ug/L to 14 ug/L) most likely due to transient effects from upgradient injection work proximal to ISCO-MW-5.

The above observations support that there have been no significant downgradient groundwater transport/impacts associated with the ISCO RA program.

As part of each groundwater monitoring event, water level measurements were collected from each monitoring well. The data collected were used to generate groundwater contour maps for the shallow and perched aquifers. Groundwater elevations are summarized on **Table 3** and groundwater elevation contour maps are included as **Attachment 6**. Groundwater flow direction in the perched aquifer is to the southeast. Groundwater flow direction in the shallow aquifer was consistently to the southwest throughout the post-injection monitoring period. This groundwater flow direction is consistent with previous findings.

### RECOMMENDATIONS FOR THE REMEDIAL PROGRAM

### **COMPLIANCE WITH OU3 REMEDIAL ACTION OBJECTIVES**

Remedial Action Objectives (RAOs) were set forth in the OU3 Record of Decision (ROD) (EPA 2012) to address VOC-impacted groundwater at the Site. The following presents a discussion of historic remedial activities, the ISCO program results and overall groundwater quality pursuant to the respective RAOs.

### Remediate groundwater to the extent practicable...

Prior to the OU3 ISCO RA, and as documented in the OU2 Remedial Action Report (*de maximis, inc.*, 2013), numerous soil/source area removal activities were previously completed across the Site, to address impacted soils, drum fragments, and other potential source areas which may have posed ongoing impacts to groundwater. These potential source area removals commenced in the 1970s and culminated with the completion of the OU2 remedial program in 2012. As documented in the OU3 Remedial Investigation Report (Arcadis, 2011), concentrations of site-related constituents in groundwater (e.g., TCE, 1,2-DCA) have declined over the years in conjunction with the various source removals, and this finding is supported by the more recent groundwater monitoring conducted during the ISCO remedial action. As shown on Figure 4 and described above, groundwater sampling results for downgradient wells from the ISCO treatment areas (MW-10S, MW-14S, and ISCO-MW-4) have exhibited VOC concentrations near or below GWQS throughout the injections, and this is consistent with the groundwater results for other wells located outside the treatment areas along the downgradient property boundary. The goal of the ISCO remedial action was to address residual concentrations of remaining groundwater constituents within the designated treatment areas to the extent practicable, and the key findings are summarized as follows:

### Treatment Area 1

Two full ISCO injection events have been successfully completed within Treatment Area 1, as documented in this report and in the Injection Event #1/Post-Injection Monitoring Report (OBG, November 2014). Findings from the groundwater monitoring for the Treatment Area 1 wells (ISCO-MW-2, ISCO-MW-3, ISCO-MW-7, ISCO-MW-8, IW1-BT-2, and ISCO-MW-9) are summarized as follows:

A majority of the Treatment Area 1 footprint (represented by monitoring results for ISCO-MW-7, ISCO-MW-8, ISCO-MW-9, and IW1-BT-2) exhibits relatively low 1,2-DCA and TCE concentrations above the NJGWQS (in



the range of 1-10 ug/L), representing up to an order of magnitude reduction in the degree/extent of groundwater VOC impacts in this treatment area.

- For ISCO-MW-2, ISCO-MW-8 and ISCO-MW-9, significant 1,2-DCA/TCE reductions (in the range of 70%-87% from baseline/pre-injection conditions) were achieved through the ISCO injection events. For ISCO-MW-8 and ISCO-MW-9, reductions achieved through Injection Event #1 in February/March 2014 have been sustained based on post-injection groundwater monitoring results through November 2015. However, groundwater monitoring results also indicate that additional reductions for these two wells were not achieved through ISCO Injection Event #2 in June 2015.
- For ISCO-MW-7 and IW1-BT-2, the 1,2-DCA/TCE concentrations were initially low (i.e., below 10 ug/L) prior to the ISCO program, and have remained in the same range over the course of the two injection events.
- For ISCO-MW-3, groundwater monitoring results for Injection Event #2 indicate an initial reduction in TCE concentrations, followed by a return to approximate pre-injection conditions (a similar trend was noted for the groundwater monitoring results following Injection Event #1).

### Treatment Area 2

Two ISCO injection events have been successfully completed within Treatment Area 2, as documented in this report and in the Injection Event #1/Post-Injection Monitoring Report (OBG, November 2014). Findings from the groundwater monitoring for the Treatment Area 2 wells (PZ-1S, ISCO-MW-1, ISCO-MW-5, and ISCO-MW-6) are summarized as follows:

- Several wells representing a majority of the Treatment Area 2 footprint (ISCO-MW-1, PZ-1S, and ISCO-MW-6) exhibit relatively low total COC concentrations above the NJGWQS (in the range of 1-10 ug/L), representing up to an order of magnitude reduction in the degree/extent of groundwater VOC impacts in this treatment area.
- For ISCO-MW-1, significant 1,2-DCA/TCE reductions (approximately 92% from baseline/pre-injection conditions) were achieved through ISCO Injection Event #1 in February/March 2014, and with USEPA approval, no further injections were completed in the vicinity of this well for Injection Event #2. Concentrations of 1,2-DCA/TCE in this well have remained low based on the November 2015 groundwater monitoring results.
- For ISCO-MW-6 and PZ-1S, the COC concentrations were initially low (i.e., below 10 ug/L) prior to the injection work, with no significant changes in 1,2-DCA/TCE concentrations exhibited following ISCO Injection Event #1 in February/March 2014, and with USEPA approval, no further injections were completed in the vicinity of these wells for Injection Event #2. Concentrations in these wells have remained low based on the November 2015 groundwater results.
- For ISCO-MW-5 (the well with the highest overall 1,2-DCA/TCE concentrations in Treatment Area 2), monitoring results following Injection Event #1 in 2014 indicated a reduction in 1,2-DCA/TCE concentrations. However, groundwater monitoring results in early 2015 prior to Injection Event #2 indicated an increase in 1,2-DCA/TCE concentrations. Thereafter, groundwater monitoring results for Injection Event #2 indicated an initial reduction in concentrations, followed by a return to approximate pre-injection conditions.

As detailed above, the ISCO post-injection monitoring results indicate that either significant reductions have been achieved through the ISCO injection events, that previously low concentrations have been sustained (i.e., concentrations were initially low with no significant changes noted in response to the ISCO injections), or, in the case of a few wells, 1,2-DCA/TCE concentrations have returned to their approximate pre-injection levels. In cases where VOC reductions were achieved and have been maintained, there were no appreciable additional



reductions achieved during the ISCO Event #2. Combined, these findings suggest that additional ISCO injections would not result in significant improvements in groundwater quality within the treatment areas. The approved RDR/RAWP for the OU3 ISCO remedial action defines the 'practical limits of the technology' as "the point in the program at which the application of additional ISCO treatment/expenditure of costs would yield only incremental/marginal improvements in groundwater quality and would not facilitate further achievement of the remedial action objectives." Based on the ISCO work and associated groundwater monitoring results completed to-date as summarized above, the practical limits of the ISCO technology have been achieved in Treatment Areas 1 and 2.

### ...and minimize the potential for further migration of contaminants in groundwater

Monitoring wells immediately downgradient of the two treatment areas (MW-10S, MW-14S, and ISCO-MW-4) continue to show no significant migration/mobilization of groundwater constituents from the injection areas, as described above. In addition, VOC concentrations in downgradient monitoring wells located on the CPS/Madison Industries (CPS/Madison) property (MW-23S, MW-23I, MW-23D, WCC-1M, WCC-1S, and WCC-3M) have exhibited little to no changes throughout the ISCO implementation or in response to other historic groundwater activities including both operation and shut down of the interim groundwater extraction/treatment system (refer to the trend graphs in Attachment 7). As shown on the trend graphs, 1,2-DCA and TCE concentrations in MW-23I, MW-23D, WCC-1S, and WCC-3M, have remained consistently low and concentrations in MW-23S and WCC-1S have fluctuated over time with no apparent correlation to historical groundwater activities. These results continue to support the conclusion that Site groundwater is not affecting downgradient offsite groundwater quality.

### **RECOMMENDATIONS**

Based on the ISCO remedial action work and associated groundwater monitoring results for OU3 as described above, no additional ISCO injections in Treatment Areas 1 and 2 are recommended. Further, it is concluded that additional active groundwater remediation measures will not provide any added Site benefit in regard to achieving the RAOs. Therefore, in accordance with the Statement of Work in the Remedial Action Consent Decree for OU3 (February 2013), we believe that the OU3 construction has been successfully completed. Groundwater will continue to be monitored for a period of several years as a part of post-remediation groundwater monitoring in accordance with the OU3 ROD (EPA 2012). The 2016 annual groundwater monitoring event is proposed to be completed in March-April 2016 (consistent with the scope of work for the 2014 and 2015 annual events), to serve as the start of post-remediation groundwater monitoring. A Classification Exception Area (CEA) has already been established for the Site to document the area of the plume that exceeds NJGWQS. The CEA (together with other institutional controls as required) will remain in place until remediation goals are met. The maintenance of the Site CEA will limit potential future exposure to impacted groundwater until the NJGWQS have been achieved. The extent of the CEA will also be reviewed and updated as required in conjunction with the post-remediation groundwater monitoring.

Pending EPA/NJDEP review of/concurrence with the findings and conclusions presented herein, a Draft Interim Remedial Action Report will be prepared to document the overall work completed for the OU3 remedial action, including details of the post-remediation groundwater monitoring program.



Should you have any questions regarding this submission or require additional information, please do not hesitate to contact me at (732) 638-2930.

Very truly yours, O'BRIEN & GERE ENGINEERS, INC.

**Gary Angyal, PE** Vice President

cc: EPLC Site Group

Mr. Chris Young, *de maximis, inc.* Mr. Matt Grubb, *de maximis, inc.* 

Mr. Jeffrey Levesque, O'Brien & Gere Engineers, Inc. Ms. Jessica Lehigh, O'Brien & Gere Engineers, Inc.

#### **ATTACHMENTS:**

Table 1 – Ascorbic Acid Preservation Comparison Table

Table 2 – Post-Injection Event #2 Groundwater Sampling Results

Table 3 - Groundwater Elevations

Figure 1 – Site Location Map

Figure 2 – Site Plan

Figure 3 – ISCO Injection Layout & Monitoring Plan

Figure 4 - Injection Event #2 Groundwater Sampling Results

Attachment 1 - Treatment Area 1 Injection Summary & Process Monitoring Results

Attachment 2 - Treatment Area 2 Injection Summary & Process Monitoring Results

Attachment 3 - Groundwater Low-Flow Sampling Logs

Attachment 4 - Ascorbic Acid Preservation Comparison Graphs

Attachment 5 - Groundwater Results Trend Graphs

Attachment 6 – Groundwater Elevation Contour Maps

Attachment 7 – CPS/Madison Property Wells Groundwater Results Trend Graphs

Attachment 8 – Data Validation Report





Sample ID		ISC	O-1	vIW-2		ISC	O-1	/IW-3		ISO	ا <b>-</b> 01	MW-5		ISC	:O-MW-9
Sample ID	NJ CLASS IIA								7						
Residual Persulfate Concentration:	GROUNDWATER QUALITY		UU	mg/L			U M	ıg/L			.0.7	mg/L			00 mg/L
Preservative	CRITERIA (7/22/2010)	HCL		AA+HCL		HCL		AA+HCL	_	HCL		AA+HCL		HCL	AA+HCL
Sample Date Unit	ug/L	7/22/2015 ug/L	-	7/23/201! ug/L	•	7/23/2015 ug/L	-	7/23/2015 ug/L	-	7/22/2015 ug/L	_	7/23/2015 ug/L	Ĭ	7/22/2015 ug/L	7/23/2015 ug/L
Volatile Organic Compounds (VOCs)		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	ug/L
Acetone	6000	124	ĺ	146	ĺ	38.8	ĺ	47.8	ī	7.4	J	11.6		ND (3.3)	7 J
Benzene	1	0.42	J	1.4	J	ND (0.24)		ND (0.47)		0.64		0.57		ND (0.24)	ND (0.24)
Bromochloromethane	-	ND (0.37)		ND (1.9)		ND (0.37)		ND (0.74)		ND (0.37)		ND (0.37)		ND (0.37)	ND (0.37)
Bromodichloromethane	1	ND (0.23) ND (0.23)	-	ND (1.1) ND (1.2)	-	ND (0.23)	-	ND (0.45) ND (0.47)	4	ND (0.23)		ND (0.23)		ND (0.23) ND (0.23)	ND (0.23)
Bromoform Bromomethane	4 10	ND (0.23) ND (0.42)	-	ND (1.2) ND (2.1)	-	ND (0.23) ND (0.42)	-	ND (0.47) ND (0.85)	+	ND (0.23) 6.2		ND (0.23) 6.2		ND (0.23) ND (0.42)	ND (0.23) ND (0.42)
2-Butanone (MEK)	300	8.9	J			ND (5.6)	-	ND (11)	+	ND (5.6)		ND (5.6)		ND (5.6)	ND (5.6)
Carbon disulfide	700	4.1	Ė	ND (1.3)		0.68	J	ND (0.51)	7	ND (0.25)		ND (0.25)		ND (0.25)	ND (0.25)
Carbon tetrachloride	1	ND (0.22)		ND (1.1)		ND (0.22)		ND (0.44)		ND (0.22)		ND (0.22)		ND (0.22)	ND (0.22)
Chlorobenzene	50	ND (0.19)		ND (0.93)		ND (0.19)		ND (0.37)		ND (0.19)		ND (0.19)		ND (0.19)	ND (0.19)
Chloroethane	=	ND (0.34)		ND (1.7)		ND (0.34)		ND (0.68)		ND (0.34)		ND (0.34)		ND (0.34)	ND (0.34)
Chloroform	70	1.1	-	ND (0.94)	_	ND (0.19)	-	ND (0.37)	_	ND (0.19)		ND (0.19)		ND (0.19)	ND (0.19)
Chloromethane Cyclohexane	-	ND (0.41) ND (0.28)	-	ND (2.0) ND (1.4)	<u> </u>	ND (0.41) ND (0.28)	-	ND (0.81) ND (0.56)		6.1 0.39	J	5.5 0.33	J	ND (0.41) ND (0.28)	ND (0.41) ND (0.28)
1,2-Dibromo-3-chloropropane	0.02	ND (0.28)	t	ND (5.0)	H	ND (0.20)	t	ND (0.30)	-	ND (0.99)	Ť	ND (0.99)	H	ND (0.20)	ND (0.99)
Dibromochloromethane	1	ND (0.15)	T	ND (0.77)	T	ND (0.15)	T	ND (0.31)	1	ND (0.15)	П	ND (0.15)	П	ND (0.15)	ND (0.15)
1,2-Dibromoethane	0.03	ND (0.23)		ND (1.2)		ND (0.23)		ND (0.46)		ND (0.23)		ND (0.23)		ND (0.23)	ND (0.23)
1,2-Dichlorobenzene	600	0.37	J	(0.00)		ND (0.19)		ND (0.37)		ND (0.19)		ND (0.19)		ND (0.19)	ND (0.19)
1,3-Dichlorobenzene	600	ND (0.23)	1	ND (1.1)	$\vdash$	ND (0.23)	1	ND (0.45)	4	ND (0.23)	Щ	ND (0.23)	Н	ND (0.23)	ND (0.23)
1,4-Dichlorobenzene Dichlorodifluoromethane	75 1000	ND (0.27) ND (0.90)	Ͱ	ND (1.4) ND (4.5)	Ͱ	ND (0.27) ND (0.90)	Ͱ	ND (0.55) ND (1.8)	4	ND (0.27) ND (0.90)	H	ND (0.27) ND (0.90)	Н	ND (0.27) ND (0.90)	ND (0.27) ND (0.90)
1,1-Dichloroethane	50	ND (0.90) ND (0.17)	$\vdash$	ND (4.5) ND (0.86)	$\vdash$	ND (0.90) ND (0.17)	$\vdash$	ND (1.8) ND (0.34)	+	0.69	J	0.68	J	ND (0.90) ND (0.17)	ND (0.90) ND (0.17)
1,2-Dichloroethane	2	84.9	<u> </u>	127		ND (0.18)	<u> </u>	ND (0.36)	=	106	Ť	109	Ť	ND (0.18)	ND (0.18)
1,1-Dichloroethene	1	ND (0.51)		ND (2.6)		ND (0.51)		ND (1.0)		ND (0.51)		ND (0.51)		ND (0.51)	ND (0.51)
cis-1,2-Dichloroethene	70	0.64	J	\ /		37.6		38.8		3.3		3.2		0.51	J 0.3 J
trans-1,2-Dichloroethene	100	ND (0.65)		ND (3.2)		ND (0.65)		ND (1.3)		ND (0.65)		ND (0.65)		ND (0.65)	ND (0.65)
1,2-Dichloropropane	1	ND (0.39) ND (0.21)	-	ND (2.0)	_	ND (0.39) ND (0.21)	-	ND (0.79)	_	ND (0.39)		ND (0.39) ND (0.21)		ND (0.39)	ND (0.39)
cis-1,3-Dichloropropene trans-1,3-Dichloropropene	-	ND (0.21) ND (0.19)	-	ND (1.0) ND (0.93)	-	ND (0.21) ND (0.19)	-	ND (0.41) ND (0.37)	+	ND (0.21) ND (0.19)		ND (0.21) ND (0.19)		ND (0.21) ND (0.19)	ND (0.21) ND (0.19)
1,4-Dioxane	-	ND (41)	-	ND (200)		ND (41)	-	ND (81)	+	ND (0.19)		ND (41)		ND (41)	ND (41)
Ethylbenzene	700	ND (0.27)	T	ND (1.3)		ND (0.27)	T	ND (0.54)	7	ND (0.27)		ND (0.27)		ND (0.27)	ND (0.27)
Freon 113	-	ND (0.52)		ND (2.6)		ND (0.52)		ND (1.0)		ND (0.52)		ND (0.52)		ND (0.52)	ND (0.52)
2-Hexanone	-	ND (1.7)		ND (8.7)		ND (1.7)		ND (3.5)		ND (1.7)		ND (1.7)		ND (1.7)	ND (1.7)
Isopropylbenzene	700	ND (0.23)		ND (1.2)	<u> </u>	ND (0.23)		ND (0.47)		0.65	J	0.58	J	ND (0.23)	ND (0.23)
Methyl Acetate  Methylcyclohexane	7000	ND (1.9) ND (0.22)	-	ND (9.4) ND (1.1)	_	ND (1.9) ND (0.22)	-	ND (3.8) ND (0.44)	_	ND (1.9) ND (0.22)		ND (1.9) ND (0.22)		ND (1.9) ND (0.22)	ND (1.9) ND (0.22)
Methyl Tert Butyl Ether	70	ND (0.24)	-	ND (1.2)	1	ND (0.24)	-	ND (0.47)		ND (0.24)		ND (0.24)		ND (0.24)	ND (0.24)
4-Methyl-2-pentanone(MIBK)	÷.	ND (1.0)		ND (5.1)		ND (1.0)		ND (2.0)		ND (1.0)		ND (1.0)		ND (1.0)	ND (1.0)
Methylene chloride	3	ND (0.73)	_	ND (3.6) ND (1.4)	_	ND (0.73)	_	ND (1.5) ND (0.54)	4	ND (0.73) ND (0.27)		ND (0.73)		ND (0.73) ND (0.27)	ND (0.73) ND (0.27)
Styrene 1,1,2,2-Tetrachloroethane	100	ND (0.27) ND (0.21)	-	ND (1.4) ND (1.0)	_	ND (0.27) ND (0.21)	-	ND (0.54) ND (0.41)	4	ND (0.21)		ND (0.27) ND (0.21)		ND (0.27) ND (0.21)	ND (0.27) ND (0.21)
Tetrachloroethene	1	3.7	T	ND (2.0)		1.8	T	1.3	J	ND (0.40)		ND (0.40)		1.3	1.1
Toluene	600	0.37	J	, ,		ND (0.16)		ND (0.32)		ND (0.16)		ND (0.16)		ND (0.16)	0.2 J
1,2,3-Trichlorobenzene 1,2,4-Trichlorobenzene	9	0.26 0.92	J		_	ND (0.23) ND (0.21)	-	ND (0.45) ND (0.42)	_	ND (0.23) ND (0.21)		ND (0.23) ND (0.21)		ND (0.23) ND (0.21)	ND (0.23) ND (0.21)
1,1,1-Trichloroethane	30	ND (0.25)	۲	ND (1.0)	$\vdash$	ND (0.21) ND (0.25)	H	ND (0.42) ND (0.50)	1	0.49	J	0.54	J	ND (0.21) ND (0.25)	ND (0.21)
1,1,2-Trichloroethane	3	ND (0.21)		ND (1.1)		ND (0.21)		ND (0.43)		ND (0.21)		ND (0.21)		ND (0.21)	ND (0.21)
Trichloroethene	1	9.9 ND (0.43)	L	2.7 ND (2.1)	J	36.4 ND (0.43)	L	33.3 ND (0.96)	4	22.6 ND (0.43)	Ц	20.5 ND (0.43)	Ц	13.3 ND (0.43)	10.4 ND (0.43)
Trichlorofluoromethane Vinyl chloride	2000	ND (0.43) 0.9	J	ND (2.1) ND (0.74)	╁	ND (0.43) ND (0.15)	╁	ND (0.86) ND (0.29)	-	ND (0.43) ND (0.15)	H	ND (0.43) ND (0.15)	Н	ND (0.43) ND (0.15)	ND (0.43) ND (0.15)
m,p-Xylene	-	0.78	J	ND (1.9)	T	ND (0.38)	t	ND (0.75)	_1	ND (0.38)	Ħ	ND (0.38)	Ħ	ND (0.38)	ND (0.38)
o-Xylene	-	0.35	J			ND (0.17)		ND (0.33)		ND (0.17)		0.21	J	ND (0.17)	ND (0.17)
Xylene (total) Total VOCs	1000	1.1 241.58	╀	ND (0.83) 277.1	Ͱ	ND (0.17) 115.28	╀	ND (0.33) 121.2	4	ND (0.17) 154.46	H	0.21 158.91	J	ND (0.17) 15.11	ND (0.17) 19
Total VOCs Total VOCs above GWQS	-	98.5	t	131.1	$\vdash$	38.2	t	34.6	-	128.6	H	129.5	H	14.6	11.5
															<u> </u>
GC/MS Volatile TIC										24 =		00.1			
Total TIC, Volatile Total Alkanes	-	0	┢	0	┢	0	┢	0	4	<b>21.7</b> 0	J	<b>29.1</b>	J	0	0
. oca. / incirco	· · · · · · · · · · · · · · · · · · ·		1		1	-	1		-	,	ш		Ч	5	
Metals Analysis															
Total Chromium	70	5,790		-		3,750		-		<10		-	П	10.7	-
Dissolved Chromium Dissolved Iron	300	6,970 113	╀	-	Ͱ	<b>4,820</b> 334	╀	<del>                                     </del>	4	<10 3,930	H	-	Н	<10 <100	
Total Sodium	50000	7,050,000	H	-	$\vdash$	4,210,000	H	-	1	42,100		-	H	80,200	
			_	•	_	,	_		J						
General Chemistry															
Solids, Total Dissolved Sulfate	500000 250000	25,800,000 8,050,000	1	-	H	15,900,000 3,990,000	1	-	4	254,000 128,000	H	-	H	546,000 219,000	-
	255000	0,000,000	1	I.	1	3,550,000	1			120,000	Ш		<u> </u>	225,000	

Sample I	D.	2RND1 FR	2RND1 FB	2RND1 FB	2RND1 FR	TRIPRI ANK	TRIPRIANK	2RND1 ISCO-MW-2	2RND1 ISCO-MW-2	2RND1 ISCO-MW-2 AS	C 2RND1 ISCO-MW-3	2RND1 ISCO-MW-	3 2RND1 ISCO-MW-3 AS	SC 2RND1 ISCO-MW-4	2RND1 ISCO-MW-	2RND1 ISCO-MW-	5 2RND1 ISCO-MW-5	2RND1 ISCO-MW-5 ASC	2RND1 DUP 0722	15 2RND1 DUP	2RND1 ISCO-MW-7
Sample Dat	NJ CLASS IIA	JB99691-12	JB99691-12F	JB99691-16	JB99691-16F	JB99691-11	JB99691-15	JB99691-9	JB99691-9F	JB99691-19	JB99691-13	JB99691-13F	JB99691-20	JB99691-4	JB99691-4F	JB99691-6	JB99691-6F	JB99691-18	JB99691-7	JB99691-7F	JB99691-8
Sample Typ	GROUNDWATER QUALITY	7/22/2015	7/22/2015	7/23/2015	7/23/2015	7/23/2015	7/23/2015	7/22/2015	7/22/2015	7/23/2015	7/23/2015	7/23/2015	7/23/2015	7/22/2015	7/22/2015	7/22/2015	7/22/2015	7/23/2015	7/22/2015	7/22/2015	7/22/2015
Matri	CRITERIA (7/22/2010)	WATER	WATER-FILTERED	D WATER	WATER-FILTERED	WATER	WATER	GW	GW-FILTERED	GW	GW	GW-FILTERED	GW	GW	GW-FILTERED	GW	GW-FILTERED	GW	GW	GW-FILTERED	GW
Un	it ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Volatile Organic Compounds (VOCs)																					
Acetone	6000	ND (3.3) ND (0.24)	-	ND (3.3)	-		ND (3.3)		-	146 1.4	38.8	-	47.8 ND (0.47)	ND (3.3)	-	7.4 0.64	J -	11.6 0.57	7.4 0.61	J -	48.9
Benzene Bromochloromethane	1	ND (0.24) ND (0.37)	-	ND (0.24) ND (0.37)	-	ND (0.24) ND (0.37)	ND (0.24) ND (0.37)	0.42 J ND (0.37)	-	1.4 ND (1.9)	ND (0.24) ND (0.37)	-	ND (0.47) ND (0.74)	ND (0.24) ND (0.37)	-	0.64 ND (0.37)	-	0.57 ND (0.37)	0.61 ND (0.37)	-	ND (0.24) ND (0.37)
Bromodichloromethane	1	ND (0.23)	-	ND (0.23)	<del>-</del> -	ND (0.23)	ND (0.23)	ND (0.23)	-	ND (1.1)	ND (0.23)	-	ND (0.45)	ND (0.23)	-	ND (0.23)	-	ND (0.23)	ND (0.23)	-	ND (0.23)
Bromoform	4	ND (0.23)	-	ND (0.23)	-	ND (0.23)	ND (0.23)	ND (0.23)	-	ND (1.2)	ND (0.23)	-	ND (0.47)	ND (0.23)	-	ND (0.23)	-	ND (0.23)	ND (0.23)	-	ND (0.23)
Bromomethane	10	ND (0.42)	-	ND (0.42)	-	ND (0.42)	ND (0.42)	ND (0.42)	-	ND (2.1)	ND (0.42)	-	ND (0.85)	ND (0.42)	-	6.2	-	6.2	5.4	-	5.7
2-Butanone (MEK) Carbon disulfide	300 700	ND (5.6) ND (0.25)		ND (5.6) ND (0.25)	-	ND (5.6) ND (0.25)	ND (5.6) ND (0.25)	8.9 J 4.1	-	ND (28) ND (1.3)	ND (5.6) 0.68	-	ND (11) ND (0.51)	ND (5.6) ND (0.25)	-	ND (5.6) ND (0.25)	-	ND (5.6) ND (0.25)	ND (5.6) ND (0.25)	-	ND (5.6) ND (0.25)
Carbon tetrachloride	1	ND (0.22)		ND (0.22)	-		ND (0.22)		-	ND (1.1)	ND (0.22)	-	ND (0.44)	ND (0.22)	-	ND (0.22)	-	ND (0.22)	ND (0.22)	-	0.81 J
Chlorobenzene	50	ND (0.19)		ND (0.19)	-	140 (0.13)	ND (0.19)		-	ND (0.93)	ND (0.19)	-	ND (0.37)	ND (0.19)	-	ND (0.19)	-	ND (0.19)	ND (0.19)		ND (0.19)
Chloroform	5 70	ND (0.34) ND (0.19)		ND (0.34) ND (0.19)	-	ND (0.34)	ND (0.34) ND (0.19)	ND (0.34) 1.1	-	ND (1.7) ND (0.94)	ND (0.34) ND (0.19)	-	ND (0.68) ND (0.37)	ND (0.34) 0.3 J	-	ND (0.34) ND (0.19)	-	ND (0.34) ND (0.19)	ND (0.34) ND (0.19)		ND (0.34) 1.7
Chloroform Chloromethane	-	ND (0.19)		ND (0.19)	<del>-</del> -	140 (0.13)	ND (0.19)	ND (0.41)	-	ND (0.94)	ND (0.19)	-	ND (0.81)	ND (0.41)	-	6.1	-	5.5	5.4		3
Cyclohexane	-	ND (0.28)	-	ND (0.28)	-	ND (0.28)	ND (0.28)	ND (0.28)	<u> </u>	ND (1.4)	ND (0.28)	-	ND (0.56)	ND (0.28)	-	0.39	J -	0.33 J	0.32		ND (0.28)
1,2-Dibromo-3-chloropropane	0.02	ND (0.99)	-	ND (0.99)	-	110 (0.55)	ND (0.99)	ND (0.99)		ND (5.0)	ND (0.99)		ND (2.0)	ND (0.99)		ND (0.99)	-	ND (0.99)	ND (0.99)	-	ND (0.99)
Dibromochloromethane 1.2-Dibromoethane	0.03	ND (0.15) ND (0.23)		ND (0.15) ND (0.23)		110 (0.15)	ND (0.15) ND (0.23)	ND (0.15) ND (0.23)	1 -	ND (0.77) ND (1.2)	ND (0.15) ND (0.23)	+	ND (0.31) ND (0.46)	ND (0.15) ND (0.23)	-	ND (0.15) ND (0.23)	1 -	ND (0.15) ND (0.23)	ND (0.15) ND (0.23)	-	ND (0.15) ND (0.23)
1,2-Distromoethane 1,2-Distromoethane	600	ND (0.23) ND (0.19)		ND (0.23) ND (0.19)	-	110 (0.23)	ND (0.23) ND (0.19)	0.37 J	-	ND (1.2) ND (0.93)	ND (0.23) ND (0.19)		ND (0.46) ND (0.37)	ND (0.23) ND (0.19)	- 1	ND (0.23) ND (0.19)	- 1	ND (0.23) ND (0.19)	ND (0.23)	-	ND (0.23)
1,3-Dichlorobenzene	600	ND (0.23)		ND (0.23)	-	(0.20)	ND (0.23)	ND (0.23)	-	ND (1.1)	ND (0.23)	-	ND (0.45)	ND (0.23)	-	ND (0.23)	-	ND (0.23)	ND (0.23)	-	ND (0.23)
1,4-Dichlorobenzene Dichlorodifluoromethane	75 1000	ND (0.27) ND (0.90)		ND (0.27) ND (0.90)		ND (0.27) ND (0.90)	ND (0.27) ND (0.90)	ND (0.27) ND (0.90)	-	ND (1.4) ND (4.5)	ND (0.27) ND (0.90)	-	ND (0.55) ND (1.8)	ND (0.27) ND (0.90)	-	ND (0.27) ND (0.90)	-	ND (0.27) ND (0.90)	ND (0.27) ND (0.90)	-	ND (0.27)
1.1-Dichloroethane	1000	ND (0.90) ND (0.17)		ND (0.90) ND (0.17)		ND (0.90) ND (0.17)	ND (0.90) ND (0.17)	ND (0.90) ND (0.17)	-	ND (4.5) ND (0.86)	ND (0.90) ND (0.17)	1 -	ND (1.8) ND (0.34)	ND (0.90) ND (0.17)	-	0.69	-	ND (0.90) 0.68 J	ND (0.90) 0.62	J -	ND (0.90) ND (0.17)
1,2-Dichloroethane	2	ND (0.18)	-	ND (0.18)	- 1	ND (0.18)	ND (0.18)	84.9	-	127	ND (0.18)	-	ND (0.36)	ND (0.18)	-	106	-	109	120	-	8.2
1,1-Dichloroethene	1	ND (0.51)	-	ND (0.51)	-	ND (0.51)	ND (0.51)	ND (0.51)	-	ND (2.6)	ND (0.51)	-	ND (1.0)	ND (0.51)	-	ND (0.51)	-	ND (0.51)	ND (0.51)	-	ND (0.51)
cis-1,2-Dichloroethene trans-1,2-Dichloroethene	70 100	ND (0.27) ND (0.65)	-	ND (0.27) ND (0.65)	-	ND (0.27) ND (0.65)	ND (0.27) ND (0.65)	0.64 J ND (0.65)	-	ND (1.4) ND (3.2)	37.6 ND (0.65)	-	38.8 ND (1.3)	ND (0.27) ND (0.65)	-	3.3 ND (0.65)	-	3.2 ND (0.65)	3 ND (0.65)	-	ND (0.27) ND (0.65)
1,2-Dichloropropane	1	ND (0.39)	-	ND (0.39)	<del>-</del> -	ND (0.39)	ND (0.39)	ND (0.39)	-	ND (3.2)	ND (0.39)	-	ND (0.79)	ND (0.03)	-	ND (0.39)	-	ND (0.39)	ND (0.39)	-	ND (0.39)
cis-1,3-Dichloropropene	-	ND (0.21)	-	ND (0.21)	-	ND (0.21)	ND (0.21)	ND (0.21)	-	ND (1.0)	ND (0.21)	-	ND (0.41)	ND (0.21)	-	ND (0.21)	-	ND (0.21)	ND (0.21)	-	ND (0.21)
trans-1,3-Dichloropropene	-	ND (0.19)	-	ND (0.19)	-	ND (0.19)	ND (0.19)	ND (0.19)	-	ND (0.93)	ND (0.19)	-	ND (0.37)	ND (0.19)	-	ND (0.19)	-	ND (0.19)	ND (0.19)	-	ND (0.19)
1,4-Dioxane Ethylbenzene	0.4 700	ND (41) ND (0.27)		ND (41) ND (0.27)	-	ND (41) ND (0.27)	ND (41) ND (0.27)	ND (41) ND (0.27)	-	ND (200) ND (1.3)	ND (41) ND (0.27)	-	ND (81) ND (0.54)	ND (41) ND (0.27)	-	ND (41) ND (0.27)	-	ND (41) ND (0.27)	ND (41) ND (0.27)	-	ND (41) ND (0.27)
Freon 113	20000	ND (0.52)		ND (0.52)	-	ND (0.52)	ND (0.52)	ND (0.52)	-	ND (2.6)	ND (0.52)	-	ND (1.0)	ND (0.52)	-	ND (0.52)	-	ND (0.52)	ND (0.52)	-	ND (0.52)
2-Hexanone	-	ND (1.7)		ND (1.7)	-	ND (1.7)	ND (1.7)	ND (1.7)	-	ND (8.7)	ND (1.7)	-	ND (3.5)	ND (1.7)	-	ND (1.7)	-	ND (1.7)	ND (1.7)	-	ND (1.7)
Isopropylbenzene Methyl Acetate	700 7000	ND (0.23) ND (1.9)		ND (0.23) ND (1.9)	-	ND (0.23) ND (1.9)	ND (0.23) ND (1.9)	ND (0.23) ND (1.9)	-	ND (1.2) ND (9.4)	ND (0.23) ND (1.9)	-	ND (0.47) ND (3.8)	ND (0.23) ND (1.9)	-	0.65 ND (1.9)	J -	0.58 J ND (1.9)	0.6 ND (1.9)	J -	ND (0.23) ND (1.9)
Methylcyclohexane	7000	ND (0.22)		ND (0.22)	<del>                                     </del>	(=)	ND (0.22)	ND (0.22)	-	ND (3.4)	ND (0.22)	+ : +	ND (0.44)	ND (0.22)	-	(=)		ND (1.9)	ND (0.22)		ND (0.22)
Methyl Tert Butyl Ether	70	ND (0.24)	-	ND (0.24)	-	ND (0.24)	ND (0.24)	ND (0.24)	-	ND (1.2)	ND (0.24)	-	ND (0.47)	ND (0.24)	-	ND (0.24)	-	ND (0.24)	ND (0.24)	-	0.68 J
4-Methyl-2-pentanone(MIBK)	-	ND (1.0)	-	ND (1.0)	-	ND (1.0)	ND (1.0)	ND (1.0)	-	ND (5.1)	ND (1.0)	-	ND (2.0)	ND (1.0)	-	ND (1.0)	-	ND (1.0)	ND (1.0)		ND (1.0)
Methylene chloride Styrene	3 100	ND (0.73) ND (0.27)		ND (0.73) ND (0.27)	-	ND (0.73) ND (0.27)	ND (0.73) ND (0.27)	ND (0.73) ND (0.27)	-	ND (3.6) ND (1.4)	ND (0.73) ND (0.27)	-	ND (1.5) ND (0.54)	0.88 J ND (0.27)		ND (0.73) ND (0.27)	-	ND (0.73) ND (0.27)	ND (0.73) ND (0.27)		ND (0.73) ND (0.27)
1,1,2,2-Tetrachloroethane	1	ND (0.21)		ND (0.21)	-	110 (0.27)	ND (0.21)	ND (0.21)	-	ND (1.0)	ND (0.21)	-	ND (0.41)	ND (0.21)	-	ND (0.21)	-	ND (0.21)	ND (0.21)		ND (0.21)
Tetrachloroethene	1	ND (0.40)		ND (0.40)	-	115 (0.10)	ND (0.40)	3.7	-	ND (2.0)	1.8	-	1.3	J ND (0.40)	-	ND (0.40)	-	ND (0.40)	ND (0.40)	-	0.75 J
Toluene	600	ND (0.16)		ND (0.16)	-	(0.00)	ND (0.16) ND (0.23)	0.37 J 0.26 J	-	ND (0.81)	ND (0.16) ND (0.23)	-	ND (0.32)	ND (0.16) ND (0.23)	-	ND (0.16) ND (0.23)	-	ND (0.16)	ND (0.16) ND (0.23)	-	ND (0.16) ND (0.23)
1,2,3-Trichlorobenzene 1,2,4-Trichlorobenzene	9	ND (0.23) ND (0.21)		ND (0.23) ND (0.21)		ND (0.23) ND (0.21)	ND (0.23) ND (0.21)	0.26 J 0.92 J	-	ND (1.1) ND (1.0)	ND (0.23) ND (0.21)	1 -	ND (0.45) ND (0.42)	ND (0.23) ND (0.21)	-	ND (0.23) ND (0.21)	-	ND (0.23) ND (0.21)	ND (0.23) ND (0.21)	-	ND (0.23) ND (0.21)
1,1,1-Trichloroethane	30	ND (0.25)		ND (0.25)	-		ND (0.25)	ND (0.25)		ND (1.3)	ND (0.25)	-	ND (0.50)	ND (0.25)		0.49	J -	0.54 J	0.53	J -	ND (0.25)
1,1,2-Trichloroethane	3	ND (0.21)		ND (0.21)	-	(0.22)	ND (0.21)	ND (0.21)	-		ND (0.21)	-	ND (0.43)	ND (0.21)	-	ND (0.21)	-	ND (0.21)	ND (0.21)	-	ND (0.21)
Trichloroethene Trichlorofluoromethane	2000	ND (0.22) ND (0.43)		ND (0.22) ND (0.43)	-	ND (0.22) ND (0.43)	ND (0.22) ND (0.43)	9.9 ND (0.43)	1 -	2.7 ND (2.1)	J 36.4 ND (0.43)	+ : +	33.3 ND (0.86)	0.63 J ND (0.43)	-	22.6 ND (0.43)	+ -	20.5 ND (0.43)	22.6 ND (0.43)	-	1.6 ND (0.43)
Vinyl chloride	2000	ND (0.43) ND (0.15)		ND (0.43) ND (0.15)	<del>                                     </del>	ND (0.43) ND (0.15)	ND (0.43) ND (0.15)	0.9 J	<del>                                     </del>	ND (2.1) ND (0.74)	ND (0.43) ND (0.15)	+ +	ND (0.86) ND (0.29)	ND (0.43) ND (0.15)	-	ND (0.43) ND (0.15)	-	ND (0.43) ND (0.15)	ND (0.43) ND (0.15)	-	ND (0.43) ND (0.15)
m,p-Xylene	-	ND (0.38)	-	ND (0.38)	-	ND (0.38)	ND (0.38)	0.78 J	-	ND (1.9)	ND (0.38)	-	ND (0.75)	ND (0.38)	-	ND (0.38)	-	ND (0.38)	ND (0.38)	-	ND (0.38)
o-Xylene	-	ND (0.17)	-	ND (0.17)	-	ND (0.17)	ND (0.17)	0.35 J	-	ND (0.83)	ND (0.17)	-	ND (0.33)	ND (0.17)	-	ND (0.17)	-	0.21 J	ND (0.17)	-	ND (0.17)
Xylene (total) Total VOCs	1000	ND (0.17) 0	-	ND (0.17)	-	ND (0.17)	ND (0.17)	1.1 241.58	-	ND (0.83) 277.1	ND (0.17) 115.28	-	ND (0.33) 121.2	ND (0.17) 1.81	-	ND (0.17) 154.46	-	0.21 J 158.91	ND (0.17) 166.48	-	ND (0.17) 71.34
100.7003		, ,		, ,	1 1			271.30		2//.1	113.20		161.6	1.01		134.40		130.31	100.40		72.54
GC/MS Volatile TIC																					
Total TIC, Volatile	-	0	-	0	-	0	0	0	-	0	0	-	0	0	-	21.7	J -	29.1 J	21.5	1 -	9.2 J
Total Alkanes	-	0	-	0	-	0	0	0	-	0	0	-	0	0	-	0	- 1	0	0	-	0
Metals Analysis																					
Chromium	70				<10		- 1	5790 °	6970		3750 a			18.7		<10		· L	<10		414 <sup>a</sup>
Iron Sodium	300 50000	- <10000	<100	<10000	<100	-	<del>  -  </del>	7050000	113		4210000	334	-	10000		42100	3930	-	43400	4190	944000
Socium	50000	<10000	- 1	<10000	-	-	- 1	/050000	-	-	4210000	-	-	10000	-	42100	-	-	43400	-	944000
General Chemistry																					
Solids, Total Dissolved	500000	<10000		<10000		-	- 1	25800000		-	15900000	-	-	80000	-	254000	-	- 1	243000	- 1	4760000
Sulfate	250000	<10000	-	<10000	-	-	-	8050000	-	-	3990000	-	-	65400	-	128000	-	-	125000	-	1590000

	Sample ID		2RND1 ISCO-MW-	7 2RND1 ISCO-MW-9	8 2RND1 ISCO-MW-8	2RND1 MW-9	2RND1 MW-9	2RND1 MW-9 ASC	` 2RND1 IW-1-BT2	2RND1 IW-1-RT2	2RND1 MW-10S	2RND1 MW-10S	2RND1 MW-14SD	2RND1 MW-14SD	2RND1 MW-14SS	2RND1 MW-14SS	2RND2 FB	2RND2 FB	2RND2 FB	2RND2 FR	2RND2 TRIPRI ANK	2RND2_ISCO-MW-2	2RND2_ISCO-MW-2
	Sample Date	NJ CLASS IIA	JB99691-8F	JB99691-10	JB99691-10F	JB99691-3	JB99691-3F	JB99691-17	JB99691-14	JB99691-14F	JB99691-5	JB99691-5F	JB99691-2	JB99691-2F	JB99691-1	JB99691-1F	JC3973-7	JC3973-7F	JC3973-14	JC3973-14F	JC3973-15	JC3973-12	JC3973-12F
	Sample Type	GROUNDWATER QUALITY CRITERIA (7/22/2010)	7/22/2015	7/22/2015	7/22/2015	7/22/2015	7/22/2015	7/23/2015	7/23/2015	7/23/2015	7/22/2015	7/22/2015	7/22/2015	7/22/2015	7/22/2015	7/22/2015	9/15/2015	9/15/2015	9/16/2015	9/16/2015	9/16/2015	9/16/2015	9/16/2015
	Matrix	up/L	GW-FILTERED	GW	GW-FILTERED	GW	GW-FILTERED	GW	GW	GW-FILTERED	GW	GW-FILTERED	GW	GW-FILTERED	GW	GW-FILTERED	WATER	WATER-FILTERED	) WATER	WATER-FILTERED	WATER	GW	GW-FILTERED
	Unit	-6/ -	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Volatile Organic Compounds	s (VOCs)	****			, , , , , , , , , , , , , , , , , , , ,	112 (2.0)	, ,				(0.0)				(0.0)				112 (2.2)		210 (0.0)		
Acetone Benzene		6000 1	-	16.6 ND (0.24)	-	ND (3.3) ND (0.24)	-		J 24.4 ND (0.24)	-	ND (3.3) ND (0.24)	-	ND (3.3) ND (0.24)	-	ND (3.3) ND (0.24)	-	ND (3.3) ND (0.24)		ND (3.3) ND (0.24)	-	ND (3.3) ND (0.24)	195 0.53 J	-
Bromochloromethane		-	-	ND (0.37)	-	ND (0.37)	-	ND (0.37)	ND (0.37)	-	ND (0.37)	-	ND (0.37)	-	ND (0.37)	-	ND (0.37)	-	ND (0.37)	-	ND (0.37)	ND (0.74)	- 1
Bromodichloromethane		1	-	ND (0.23)	-	ND (0.23)	-	ND (0.23)	ND (0.23)	-	ND (0.23)	-	ND (0.23)	-	ND (0.23)	-	ND (0.23)		ND (0.23)	-	ND (0.23)	ND (0.45)	-
Bromoform		4	-	ND (0.23)	-	ND (0.23)	-	ND (0.23)	ND (0.23)	-	ND (0.23)	-	ND (0.23)	-	ND (0.23)	-	ND (0.23)		ND (0.23)	-	ND (0.23)	ND (0.47)	-
Bromomethane 2-Butanone (MEK)		10 300	-	ND (0.42) ND (5.6)	-	ND (0.42) ND (5.6)	-	ND (0.42) ND (5.6)	ND (0.42) ND (5.6)	-	ND (0.42) ND (5.6)	-	ND (0.42) ND (5.6)	-	ND (0.42) ND (5.6)	-	ND (0.42) ND (5.6)	-	ND (0.42) ND (5.6)	-	ND (0.42) ND (5.6)	ND (0.85) 13.2 J	-
Carbon disulfide		700	-	1.1	J -	ND (0.25)	-		ND (0.25)	-	ND (0.25)	-	ND (0.25)		ND (0.25)	-	ND (0.25)	-	ND (0.25)	-	ND (0.25)	ND (0.51)	-
Carbon tetrachloride		1	-	0.5	J -	ND (0.22)	-	ND (0.22)	ND (0.22)	-	ND (0.22)	-	ND (0.22)	-	U.23 J		ND (0.22)	-	ND (0.22)	-	ND (0.22)	ND (0.44)	-
Chlorobenzene Chloroethane		50	-	ND (0.19) ND (0.34)	-	ND (0.19) ND (0.34)		ND (0.19) ND (0.34)			ND (0.19) ND (0.34)	-	ND (0.19) ND (0.34)	-	ND (0.19) ND (0.34)	-	ND (0.19) ND (0.34)	-	ND (0.19) ND (0.34)	-	ND (0.19) ND (0.34)	ND (0.37) ND (0.68)	
Chloroform		70	-	ND (0.34)	, -	ND (0.34) ND (0.19)	-		ND (0.34) ND (0.19)	-	ND (0.19)	-	0.24 J	-		-	ND (0.19)	-	ND (0.34) ND (0.19)	-	ND (0.34) ND (0.19)	1.3 J	
Chloromethane		-	-	ND (0.41)	-	ND (0.41)	-	ND (0.41)	ND (0.41)	-	ND (0.41)	-	ND (0.41)	-	ND (0.41)	-	ND (0.41)	-	ND (0.41)	-	ND (0.41)	4.1	-
Cyclohexane		-	-	ND (0.28)		ND (0.28)	-	(0.20)	ND (0.28)		ND (0.28)		ND (0.28)		ND (0.28)		ND (0.28)		ND (0.28)	-	ND (0.28)	ND (0.56)	-
1,2-Dibromo-3-chloropropane Dibromochloromethane		0.02	-	ND (0.99) ND (0.15)		ND (0.99) ND (0.15)	-	ND (0.99) ND (0.15)	ND (0.99) ND (0.15)	-	ND (0.99) ND (0.15)	-	ND (0.99) ND (0.15)	-	ND (0.99) ND (0.15)		ND (0.99) ND (0.15)		ND (0.99) ND (0.15)	-	ND (0.99) ND (0.15)	ND (2.0) ND (0.31)	<del>                                     </del>
1,2-Dibromoethane		0.03	-	ND (0.13)		ND (0.13)	- 1	(0.20)	ND (0.13)	-	ND (0.23)		ND (0.23)	-	110 (0.13)		ND (0.13)		ND (0.13)		ND (0.13)	ND (0.46)	
1,2-Dichlorobenzene		600	-	ND (0.19)		ND (0.19)	-	ND (0.19)	ND (0.19)	-	ND (0.19)		ND (0.19)	-	ND (0.19)		ND (0.19)	-	ND (0.19)	-	ND (0.19)	ND (0.37)	-
1,3-Dichlorobenzene 1,4-Dichlorobenzene		600 75	-	ND (0.23) ND (0.27)	-	ND (0.23) ND (0.27)	-	ND (0.23) ND (0.27)	ND (0.23) ND (0.27)	-	ND (0.23) ND (0.27)		ND (0.23) ND (0.27)	-	ND (0.23) ND (0.27)	-	ND (0.23) ND (0.27)		ND (0.23) ND (0.27)	-	ND (0.23) ND (0.27)	ND (0.45) ND (0.55)	-
Dichlorodifluoromethane		1000	-	ND (0.27) ND (0.90)		ND (0.27) ND (0.90)	-		ND (0.27) ND (0.90)	-	ND (0.27) ND (0.90)		ND (0.27) ND (0.90)		ND (0.27) ND (0.90)		ND (0.27) ND (0.90)		ND (0.27) ND (0.90)		ND (0.27) ND (0.90)	ND (0.55) ND (1.8)	
1,1-Dichloroethane		50	-	ND (0.17)	-	ND (0.17)	-	ND (0.17)	(0)	-	ND (0.17)		ND (0.17)	-	ND (0.17)	-	ND (0.17)		ND (0.17)	-	ND (0.17)	ND (0.34)	-
1,2-Dichloroethane		2	-	0.31	J -	ND (0.18)	-	ND (0.18)	ND (0.18)	-	3.2	-	ND (0.18)	-	ND (0.18)	-	ND (0.18)	-	ND (0.18)	-	ND (0.18)	308	-
1,1-Dichloroethene cis-1,2-Dichloroethene		1 70	-	ND (0.51) ND (0.27)	-	ND (0.51) 0.51 J	-	ND (0.51) 0.3	ND (0.51) J 7.8	-	ND (0.51) ND (0.27)	-	ND (0.51) ND (0.27)	-	ND (0.51) ND (0.27)	-	ND (0.51) ND (0.27)		ND (0.51) ND (0.27)	-	ND (0.51) ND (0.27)	ND (1.0) ND (0.55)	-
trans-1,2-Dichloroethene		100	-	ND (0.65)	-	ND (0.65)	-	ND (0.65)	ND (0.65)	-	ND (0.65)	-	ND (0.65)	-	ND (0.65)	-	ND (0.65)	-	ND (0.65)	-	ND (0.65)	ND (1.3)	-
1,2-Dichloropropane		1	-	ND (0.39)	-	ND (0.39)	-	ND (0.39)	ND (0.39)	-	ND (0.39)	-	ND (0.39)	-	ND (0.39)	-	ND (0.39)	-	ND (0.39)	-	ND (0.39)	ND (0.79)	-
cis-1,3-Dichloropropene		-	-	ND (0.21)	-	ND (0.21)	-	ND (0.21)	ND (0.21)	-	ND (0.21)	-	ND (0.21)	-	ND (0.21)	-	ND (0.21)		ND (0.21)	-	ND (0.21)	ND (0.41)	-
trans-1,3-Dichloropropene 1,4-Dioxane		0.4	-	ND (0.19) ND (41)	-	ND (0.19) ND (41)	-	ND (0.19) ND (41)	ND (0.19) ND (41)	-	ND (0.19) ND (41)	-	ND (0.19) ND (41)	-	ND (0.19) ND (41)	-	ND (0.19) ND (41)		ND (0.19) ND (41)	-	ND (0.19) ND (41)	ND (0.37) ND (81)	-
Ethylbenzene		700	-	ND (0.27)	-	ND (0.27)	-		ND (0.27)	-	ND (0.27)	-	ND (0.27)	-	ND (0.27)		ND (0.27)	-	ND (0.27)	-	ND (0.27)	ND (0.54)	-
Freon 113		20000	-	ND (0.52)		ND (0.52)	-		ND (0.52)	-	ND (0.52)	-	ND (0.52)		ND (0.52)	-	ND (0.52)	-	ND (0.52)	-	ND (0.52)	ND (1.0)	-
2-Hexanone		700	-	ND (1.7) ND (0.23)		ND (1.7) ND (0.23)	-	ND (1.7) ND (0.23)	ND (1.7) ND (0.23)	-	ND (1.7) ND (0.23)	-	ND (1.7) ND (0.23)	-			ND (1.7) ND (0.23)		ND (1.7) ND (0.23)	-	ND (1.7) ND (0.23)	ND (3.5) ND (0.47)	-
Isopropylbenzene Methyl Acetate		7000	-	ND (0.23)		ND (0.23)	-	ND (0.23)	ND (1.9)	-	ND (0.23)	-	ND (0.23)	-	140 (0.23)		ND (0.23)		ND (0.23)	-	ND (0.23)	ND (3.8)	-
Methylcyclohexane		-	-	ND (0.22)	-	ND (0.22)	-		ND (0.22)	-	ND (0.22)	-	ND (0.22)	-	ND (0.22)		ND (0.22)	-	ND (0.22)	-	ND (0.22)	ND (0.44)	-
Methyl Tert Butyl Ether		70	-	ND (0.24)	-	ND (0.24)	-	ND (0.24)	ND (0.24)	-	ND (0.24)	-	ND (0.24)	-	140 (0.24)		ND (0.24)	-	ND (0.24)	-	ND (0.24)	ND (0.47)	-
4-Methyl-2-pentanone(MIBK)		- 3	-	ND (1.0) ND (0.73)	-	ND (1.0) ND (0.73)	-	ND (1.0)	ND (1.0)	-	ND (1.0) ND (0.73)	-	ND (1.0)	-	ND (1.0) ND (0.73)		ND (1.0) ND (0.73)	-	ND (1.0) ND (0.73)	-	ND (1.0) ND (0.73)	ND (2.0) ND (1.5)	-
Methylene chloride Styrene		100	-	ND (0.73) ND (0.27)	-	ND (0.73) ND (0.27)		110 (0.75)	ND (0.73) ND (0.27)		ND (0.73) ND (0.27)		ND (0.73) ND (0.27)		ND (0.73) ND (0.27)		ND (0.73) ND (0.27)		ND (0.73) ND (0.27)	-	ND (0.73) ND (0.27)	ND (1.5)	-
1,1,2,2-Tetrachloroethane		1	-	ND (0.21)		ND (0.21)	-		ND (0.21)	-	ND (0.21)	-	ND (0.21)	-			ND (0.21)		ND (0.21)	-	ND (0.21)	2.6	-
Tetrachloroethene		1	-	0.78	•	1.3	-		0.65 J	-	ND (0.40)	-	ND (0.40)		ND (0.40)		ND (0.40)		ND (0.40)	-	ND (0.40)	1.7 J	-
Toluene 1,2,3-Trichlorobenzene		600	-	ND (0.16) ND (0.23)		ND (0.16) ND (0.23)	-	0.2 ND (0.23)	ND (0.16) ND (0.23)	-	ND (0.16) ND (0.23)	-	ND (0.16) ND (0.23)	-	ND (0.16) ND (0.23)		ND (0.16) ND (0.23)		ND (0.16) ND (0.23)	-	ND (0.16) ND (0.23)	ND (0.32) ND (0.45)	-
1,2,4-Trichlorobenzene		9	_	ND (0.23)		ND (0.21)	<u>-</u>	ND (0.23)	ND (0.21)	-	ND (0.21)		ND (0.21)	-			ND (0.23)		ND (0.23)	_	ND (0.23)	ND (0.42)	<u>-</u>
1,1,1-Trichloroethane		30	-	ND (0.25)	-	ND (0.25)	-	ND (0.25)	ND (0.25)	-	ND (0.25)		ND (0.25)		ND (0.25)	-	ND (0.25)		ND (0.25)	-	ND (0.25)	ND (0.50)	-
1,1,2-Trichloroethane Trichloroethene		3	-	ND (0.21)	-	ND (0.21) 13.3	-	ND (0.21) 10.4	ND (0.21) 17.7	-	ND (0.21) 0.34 J		ND (0.21) ND (0.22)	-	ND (0.21) ND (0.22)	-	ND (0.21) ND (0.22)		ND (0.21) ND (0.22)	-	ND (0.21) ND (0.22)	ND (0.43) 5.7	-
Trichlorofluoromethane		2000	-	ND (0.43)		ND (0.43)	-	ND (0.43)	ND (0.43)	-	ND (0.43)		ND (0.22) ND (0.43)		ND (0.22) ND (0.43)		ND (0.22) ND (0.43)		ND (0.22) ND (0.43)		ND (0.22) ND (0.43)	ND (0.86)	
Vinyl chloride		1	-	ND (0.15)		ND (0.15)	- 1	ND (0.15)	ND (0.15)	-	ND (0.15)	-	ND (0.15)	-	ND (0.15)	-	ND (0.15)	-	ND (0.15)	-	ND (0.15)	ND (0.29)	-
m,p-Xylene		-	-	ND (0.38)	-	ND (0.38)	-	ND (0.38)	ND (0.38)	-	ND (0.38)	-	ND (0.38)	-	ND (0.38)	-	ND (0.38)		ND (0.38)	-	ND (0.38)	ND (0.75)	-
o-Xylene Xylene (total)		1000	-	ND (0.17) ND (0.17)	+ -	ND (0.17) ND (0.17)	-	ND (0.17) ND (0.17)	ND (0.17) ND (0.17)	-	ND (0.17) ND (0.17)	-	ND (0.17) ND (0.17)	-	ND (0.17) ND (0.17)		ND (0.17) ND (0.17)		ND (0.17) ND (0.17)	-	ND (0.17) ND (0.17)	ND (0.33) ND (0.33)	-
Total VOCs		-		22.55		15.11	-		50.55		3.54		0.24	-		-			0		0	532.13	
			•					•															
GC/MS Volatile TIC			,		, , ,		,	, ,						, ,				,	1 0 1	,		, ,	,
Total TIC, Volatile Total Alkanes		-	-	0	+ - +	0	-	0	0	-	0	-	0		0		0	-	0	-	0	0	-
rotar ringings	I	-	-		-		- 1			-	· · ·	-		-		-				- 1	<u> </u>		
Metals Analysis																							
Chromium		70	583		3070		<10		3540 °	3710	13.1	<10	<10	<10		<10	<10	<10	<10	<10			
Iron Sodium		300 50000	345	3150000	590	80200	<100		1340000	158	31000	<100	171000	<100	171000	<100	<10000	<100	<10000	<100	-	6440000	144
Journal	l.	30000	- 1	3130000		00200	<u> </u>	<u> </u>	1340000	· · ·	31000	<u> </u>	1/1000	-	1/1000		<10000	<u> </u>	<10000		-	0440000	· ·
General Chemistry																							
Solids, Total Dissolved		500000	-	11400000	-	546000 219000	-	-	5310000	-	235000 108000	-	970000 295000	-	990000	-	<10000 <10000	- 1	<10000 <10000			26100000 11900000	- 1
Sulfate		250000																					

Samnle II	n.	2RND2_ISCO-MW-3	3 2RND2 ISCO-MW-3	2RND2_ISCO-MW-	4 2RND2 ISCO-MW-	1 2RND2 ISCO-MW	5 2RND2 ISCO-MW-	5 2RND2 ISCO-MW-7	2RND2 ISCO-MW	-7 2RND2 ISCO-MW-	-8 2RND2 ISCO-MW-8 2	ZRND2 ISCO-MW	-9 2RND2 ISCO-MW-	9 2RND2 IW1-BT-2	2RND2_IW1-BT-2	2 2RND2 DUP	2RND2 DUP	2RND2 MW-14SD	2RND2 MW-14SD	2RND2 MW-14SS	2RND2 MW-1455
Sample Date	NJ CLASS IIA	JC3973-11	JC3973-11F	JC3973-1	JC3973-1F	JC3973-6	JC3973-6F	JC3973-8	JC3973-8F	JC3973-13	JC3973-13F	JC3973-5	JC3973-5F	JC3973-9	JC3973-9F	JC3973-10	JC3973-10F	JC3973-2	JC3973-2F	JC3973-3	JC3973-3F
Sample Typ	GROUNDWATER QUALITY	9/16/2015	9/16/2015	9/15/2015	9/15/2015	9/15/2015	9/15/2015	9/15/2015	9/15/2015	9/16/2015	9/16/2015	9/15/2015	9/15/2015	9/16/2015	9/16/2015	9/16/2015	9/16/2015	9/15/2015	9/15/2015	9/15/2015	9/15/2015
Matri	Y CRITERIA (7/22/2010)	GW	GW-FILTERED	GW	GW-FILTERED	GW	GW-FILTERED	GW	GW-FILTERED	GW	GW-FILTERED	GW	GW - FILTERED	GW	GW-FILTERED	GW	GW-FILTERED		GW-FILTERED	GW	GW-FILTERED
Uni	nug/L it	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Volatile Organic Compounds (VOCs)																					
Acetone	6000	13.5	-	ND (3.3)	-	ND (3.3)	-	83.1	-	22.9	-	ND (3.3)	-	13.3	-	13.6	-	ND (3.3)	-	ND (3.3)	-
Benzene	1	ND (0.24)	-	ND (0.24)	-	0.79	-	ND (0.24)	-	ND (0.24)	- +	ND (0.24)	-	ND (0.24)	-	ND (0.24)	-	ND (0.24)	-	ND (0.24)	
Bromochloromethane Bromodichloromethane	1	ND (0.37) ND (0.23)	-	ND (0.37) ND (0.23)	-	ND (0.37) ND (0.23)	-	ND (0.37) ND (0.23)	-	ND (0.37) ND (0.23)	<del>- +</del>	ND (0.37) ND (0.23)	-	ND (0.37) ND (0.23)		ND (0.37) ND (0.23)	-	ND (0.37) ND (0.23)	-	ND (0.37) ND (0.23)	
Bromoform	4	ND (0.23)	-	ND (0.23)	-	ND (0.23)	-	ND (0.23)	-	ND (0.23)	<del> +</del>	ND (0.23)	-	ND (0.23)	1 - 1	ND (0.23)	-	ND (0.23)	-	ND (0.23)	+
Bromomethane	10	ND (0.42)	-	ND (0.42)	-	ND (0.42)	-	9.7	-	ND (0.42)	-	ND (0.42)	-	ND (0.42)	-	ND (0.42)	-	ND (0.42)	-	ND (0.42)	-
2-Butanone (MEK)	300	ND (5.6)	-	ND (5.6)	-	ND (5.6)	-	ND (5.6)	-	ND (5.6)	-	ND (5.6)		ND (5.6)		ND (5.6)	-	ND (5.6)	-	ND (5.6)	
Carbon disulfide Carbon tetrachloride	700	ND (0.25) ND (0.22)	-	1.1 ND (0.22)	J -	ND (0.25) ND (0.22)	-	ND (0.25) 0.95	-	0.62 ND (0.22)	J -	ND (0.25) ND (0.22)		ND (0.25) ND (0.22)		ND (0.25) ND (0.22)	-	ND (0.25) 0.62 J	-	ND (0.25) 0.59 J	+ -
Chlorobenzene	50	ND (0.22)	-		-	ND (0.19)		ND (0.19)	-	ND (0.22) ND (0.19)	1 1	ND (0.19)	-	ND (0.22) ND (0.19)		ND (0.19)	-	ND (0.19)	-		<del></del>
Chloroethane	5	ND (0.34)	-	ND (0.34)	-	ND (0.34)	-	ND (0.34)	-	ND (0.34)	-	ND (0.34)	-	ND (0.34)	-	ND (0.34)	-	ND (0.34)	-	ND (0.34)	-
Chloroform	70	0.32 J	-			ND (0.19)	-	1.9	-	ND (0.19)		ND (0.19)	-	0.22 J		ND (0.19)	-	0.59 J		0.57	
Chloromethane Cyclohexane	-	ND (0.41) ND (0.28)		ND (0.41) ND (0.28)		ND (0.41) <b>0.5</b>		3.9 ND (0.28)	-	ND (0.41) ND (0.28)	<del> +</del>	ND (0.41) ND (0.28)		ND (0.41) ND (0.28)		ND (0.41) ND (0.28)	-	ND (0.41) ND (0.28)	-	ND (0.41) ND (0.28)	+
1,2-Dibromo-3-chloropropane	0.02	ND (0.28) ND (0.99)	-			ND (0.99)		ND (0.28) ND (0.99)	<del>                                     </del>	ND (0.28) ND (0.99)	<del>                                     </del>	ND (0.28) ND (0.99)		ND (0.28) ND (0.99)		ND (0.28) ND (0.99)	+ - +	ND (0.28) ND (0.99)	-	140 (0.20)	+ -
Dibromochloromethane	1	ND (0.15)		ND (0.15)	-	ND (0.15)	-	ND (0.15)	-	ND (0.15)	- 1	ND (0.15)		ND (0.15)	-	ND (0.15)	-	ND (0.15)		ND (0.15)	-
1,2-Dibromoethane	0.03	ND (0.23)	-	ND (0.23)		ND (0.23)		ND (0.23)	-	ND (0.23)	1 - 11	ND (0.23)		ND (0.23)		ND (0.23)		ND (0.23)	-	140 (0.23)	
1,2-Dichlorobenzene 1,3-Dichlorobenzene	600 600	ND (0.19) ND (0.23)	-	140 (0.13)	-	ND (0.19) ND (0.23)		ND (0.19) ND (0.23)	-	ND (0.19) ND (0.23)	+ : ++	ND (0.19) ND (0.23)		ND (0.19) ND (0.23)		ND (0.19) ND (0.23)		ND (0.19) ND (0.23)	<del>                                     </del>	ND (0.19) ND (0.23)	+
1,4-Dichlorobenzene	75	ND (0.23) ND (0.27)	-		-	ND (0.23)		ND (0.23)	-	ND (0.23)	<del> +</del>	ND (0.23)		ND (0.23) ND (0.27)		ND (0.27)	-	ND (0.27)	-		+
Dichlorodifluoromethane	1000	ND (0.90)		ND (0.90)		ND (0.90)	-	ND (0.90)	-	ND (0.90)	- 1	ND (0.90)	-	ND (0.90)	-	ND (0.90)		ND (0.90)	-	ND (0.90)	
1,1-Dichloroethane	50	ND (0.17)	-	ND (0.17)	-	0.89		ND (0.17)	-	ND (0.17)		ND (0.17)		ND (0.17)		ND (0.17)	-	ND (0.17)	-	ND (0.17)	
1,2-Dichloroethane 1.1-Dichloroethene	1	0.28 J ND (0.51)	-	1.4 ND (0.51)	-	137 ND (0.51)		16.5 ND (0.51)	-	1.7 ND (0.51)	<del>- +</del>	ND (0.18) ND (0.51)	-	ND (0.18) ND (0.51)		ND (0.18) ND (0.51)	-	ND (0.18) ND (0.51)	-	ND (0.18) ND (0.51)	+
cis-1,2-Dichloroethene	70	73.4	-	ND (0.31)	-	4.7	-	ND (0.31)	-	ND (0.31)	<del> </del>	ND (0.27)	-	3.5	-	3.4	-	ND (0.27)	-	ND (0.27)	<del> </del>
trans-1,2-Dichloroethene	100	1.1	-	ND (0.65)	-	ND (0.65)	-	ND (0.65)	-	ND (0.65)	-	ND (0.65)	-	ND (0.65)	-	ND (0.65)	-	ND (0.65)	-	ND (0.65)	-
1,2-Dichloropropane	1	ND (0.39)	-	ND (0.39)	-	ND (0.39)	-	ND (0.39)	-	ND (0.39)	-	ND (0.39)	-	ND (0.39)	-	ND (0.39)	-	ND (0.39)	-	ND (0.39)	-
cis-1,3-Dichloropropene trans-1,3-Dichloropropene	-	ND (0.21) ND (0.19)	-	ND (0.21) ND (0.19)	-	ND (0.21) ND (0.19)	-	ND (0.21) ND (0.19)	-	ND (0.21) ND (0.19)	<del>- +</del>	ND (0.21) ND (0.19)	-	ND (0.21) ND (0.19)		ND (0.21) ND (0.19)	-	ND (0.21) ND (0.19)	-	ND (0.21) ND (0.19)	+
1,4-Dioxane	0.4	ND (41)	-	ND (0.13)	-	ND (41)		ND (0.13)	-	ND (0.13) ND (41)	<del> +</del>	ND (41)	-	ND (0.13)	1 - 1	ND (41)	-	ND (41)	-	ND (0.13) ND (41)	+ - + +
Ethylbenzene	700	ND (0.27)	-	ND (0.27)	-	ND (0.27)	-	ND (0.27)	-	ND (0.27)	-	ND (0.27)		ND (0.27)	-	ND (0.27)	-	ND (0.27)	-	ND (0.27)	
Freon 113	20000	ND (0.52)	<del>                                     </del>	ND (0.52)	-	ND (0.52)		ND (0.52) ND (1.7)	-	ND (0.52)	-	ND (0.52)		ND (0.52) ND (1.7)	-	ND (0.52)	-	ND (0.52)	-	ND (0.52)	
2-Hexanone Isopropylbenzene	700	ND (1.7) ND (0.23)		ND (1.7) ND (0.23)	-	ND (1.7) 0.94		ND (1.7) ND (0.23)	-	ND (1.7) ND (0.23)	<del>                                     </del>	ND (1.7) ND (0.23)		ND (1.7) ND (0.23)		ND (1.7) ND (0.23)	+ -	ND (1.7) ND (0.23)		ND (1.7) ND (0.23)	+ : +
Methyl Acetate	7000	ND (1.9)	_	ND (1.9)	-	ND (1.9)		ND (1.9)	-	ND (0.23)	1 - 11	ND (1.9)	_	ND (1.9)	-	ND (1.9)	-	ND (1.9)	_	ND (1.9)	<del> </del>
Methylcyclohexane	-	ND (0.22)	-		-	ND (0.22)		ND (0.22)	-	ND (0.22)	- 1	ND (0.22)	-	ND (0.22)	-	ND (0.22)	-	ND (0.22)	-	ND (0.22)	
Methyl Tert Butyl Ether	70	ND (0.24)	-	ND (0.24)		ND (0.24)	-	1.6	-	ND (0.24)	-	ND (0.24)		ND (0.24)	-	ND (0.24)	-	ND (0.24)	-	ND (0.24)	-
4-Methyl-2-pentanone(MIBK)	- 3	ND (1.0) ND (0.73)	-	140 (1.0)		ND (1.0) ND (0.73)		ND (1.0) 0.88	-	ND (1.0) ND (0.73)	<del>                                     </del>	ND (1.0) ND (0.73)		ND (1.0) ND (0.73)	-	ND (1.0) ND (0.73)	-	ND (1.0)	-	ND (1.0)	<del>  </del>
Methylene chloride Styrene	100	ND (0.73)		ND (0.27)		ND (0.73) ND (0.27)		ND (0.27)	-	ND (0.73)		ND (0.73) ND (0.27)		ND (0.73)		ND (0.73)	-	ND (0.73) ND (0.27)	_	ND (0.73) ND (0.27)	+ +
1,1,2,2-Tetrachloroethane	1	ND (0.21)	-	ND (0.21)	-	ND (0.21)	-	0.46	-	ND (0.21)	-	ND (0.21)	-	ND (0.21)	-	ND (0.21)	-	ND (0.21)	-	ND (0.21)	- 1
Tetrachloroethene	1	2.9	-	110 (0.10)	-	ND (0.40)		ND (0.40)	-	ND (0.40)	-	1.3		0.51 J	-	0.47	J -	ND (0.40)	-	ND (0.40)	-
Toluene 1,2,3-Trichlorobenzene	600	ND (0.16) ND (0.23)	<del>                                     </del>	ND (0.16) ND (0.23)	-	ND (0.16) ND (0.23)		ND (0.16) ND (0.23)	-	ND (0.16) ND (0.23)	1 1	ND (0.16) ND (0.23)		ND (0.16) ND (0.23)		ND (0.16) ND (0.23)	-	ND (0.16) ND (0.23)	-	ND (0.16) ND (0.23)	+
1,2,4-Trichlorobenzene	9	ND (0.23) ND (0.21)	+ +	ND (0.23)	-	ND (0.23) ND (0.21)		ND (0.23) ND (0.21)	-	ND (0.23) ND (0.21)	<del>                                     </del>	ND (0.23)		ND (0.23) ND (0.21)		ND (0.23)	+ - +	ND (0.21)		ND (0.23) ND (0.21)	<del>+ : +</del>
1,1,1-Trichloroethane	30	ND (0.25)	-	ND (0.25)	-	0.44	J -	ND (0.25)	-	ND (0.25)	-	ND (0.25)	-	ND (0.25)	-	ND (0.25)	-	ND (0.25)	-	ND (0.25)	
1,1,2-Trichloroethane	3	ND (0.21)	-	110 (0.22)		ND (0.21)		ND (0.21)	-	ND (0.21)	-	ND (0.21)		ND (0.21)	-	ND (0.21)	-	ND (0.21)	-	ND (0.21)	<del> </del>
Trichloroethene Trichlorofluoromethane	2000	69.4 ND (0.43)	-	0.7 ND (0.43)	-	31.6 ND (0.43)		0.8 ND (0.43)	-	0.47 ND (0.43)	<del>'                                     </del>	14.2 ND (0.43)		11.9 ND (0.43)	-	12 ND (0.43)	+ -	ND (0.22)	-	ND (0.22) ND (0.43)	+ - +
Vinyl chloride	1	ND (0.43) ND (0.15)	-	ND (0.43)		ND (0.15)		ND (0.43)	-	ND (0.43)	- 1	ND (0.43)	-	ND (0.15)		ND (0.15)	-	ND (0.43)	-	ND (0.43)	<del>                                     </del>
m,p-Xylene	-	ND (0.38)	-	ND (0.38)	-	ND (0.38)	-	ND (0.38)	-	ND (0.38)	-	ND (0.38)	-	ND (0.38)	-	ND (0.38)	-	ND (0.38)	-	ND (0.38)	-
o-Xylene	-	ND (0.17)	-	ND (0.17)	-	0.97	J -	ND (0.17)	-	ND (0.17)	-	ND (0.17)	-	ND (0.17)	-	ND (0.17)	-	ND (0.17)	-	ND (0.17)	<del> </del>
Xylene (total) Total VOCs	1000	ND (0.17) 160.9	-	ND (0.17) 7.04	-	0.97 177.83	-	ND (0.17) 119.79	-	ND (0.17) 25.69		ND (0.17) 15.5	-	ND (0.17) 29.43	-	ND (0.17) 29.47	-	ND (0.17) 1.21	-	ND (0.17) 1.16	+
700.700	1	100.5	1	7.04	1	177.03	ı	113.73	1	23.03	1 1	13.3	1	23.73		23.77	1	1.61	ı	1.10	
GC/MS Volatile TIC																					
Total TIC, Volatile	-	0	-	0	-	58	J -	15 J	-	0		0		0	- 1	0	- 1	0	-	0	$\Box$
Total Alkanes	-	0	-	0	-	0	-	0	-	0		0	-	0	-	0	<u> </u>	0	-	0	
Metals Analysis																					
Chromium	70	1450 b	1570	148	<10	<10	<10	744	845	4760 °	5040 a	11.1	11.9	2290	2380	2650	2320	114	<10	<10	<10
Iron	300	-	2160	-	256	-	11300	-	<100	-	141	-		-	105		<100	-		-	<100
Sodium	50000	1430000	-	17000	-	70900	-	1260000	-	5210000	-	100000	-	964000	-	1060000	-	97900	-	120000	
General Chemistry																					
Solids, Total Dissolved	500000	6410000	1 - 1	94000	- I	325000	1 - 1	5230000	-	17200000	- 11	397000		3380000		3260000	1 - 1	576000	1 - 1	609000	
Sulfate	250000	1440000		47300		133000		2420000	-	4290000		161000		1140000		1130000	-	156000		165000	
																			<u> </u>		

	Sample ID		2RND3 FB	2RND3 FB	2RND3 FB	2RND3 FB	2RND3 TRIP BLANI	C 2RND3 ISCO-MW-	2 2RND3 ISCO-MW-2	2RND3 ISCO-MW-	3 2RND3 ISCO-MW-3	2RND3 ISCO-MW-	-4 2RND3 ISCO-MW	/- 2RND3 ISCO-MW-5	2RND3 ISCO-MW	/-5 2RND3 ISCO-MW-7	2RND3 ISCO-MW	-7 2RND3 ISCO-MW-	8 2RND3 ISCO-MW	-8 2RND3 ISCO-MW	-9 2RND3 ISCO-MW	-9 2RND3 DUP	2RND3 DUP
	Sample Date	NJ CLASS IIA ROUNDWATER QUALITY	JC6498-8	JC6498-8F	JC6498-14	JC6498-14F	JC6498-15	JC6498-13	JC6498-13F	JC6498-6	JC6498-6F	JC6498-1	JC6498-1F	JC6498-11	JC6498-11F	JC6498-5	JC6498-5F	JC6498-7	JC6498-7F	JC6498-4	JC6498-4F	JC6498-9	JC6498-9F
:	Sample Type	CRITERIA (7/22/2010)	10/15/2015	10/15/2015	10/16/2015		10/16/2015	10/16/2015	10/16/2015	10/15/2015	10/15/2015	10/15/2015	10/15/2015	10/16/2015	10/16/2015	10/15/2015	10/15/2015	10/15/2015	10/15/2015	10/15/2015	10/15/2015	10/15/2015	10/15/2015
	Matrix	ug/L	WATER	WATER-FILTERE		NATER-FILTER	EL WATER	GW	GW-FILTERED	GW	GW-FILTERED	GW	GW-FILTERED	GW	GW-FILTERED	GW	GW-FILTERED	GW	GW-FILTERED	GW	GW-FILTERED		GW-FILTERED
Volatile Organic Compounds (VC	Unit		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Acetone	ocs)	6000	ND (3.3)	1 - 1	ND (3.3)	1 - 1	ND (3.3)	235		25.4	1 - 1	ND (3.3)		ND (3.3)		11.8		31.3	1	9.6	11 -	10.9	
Benzene		1	ND (0.24)	-	ND (0.24)	-	ND (0.24)	0.89	-	ND (0.24)		ND (0.24)		0.97	-	ND (0.24)	- 1	ND (0.24)	-	ND (0.24)	-	ND (0.24)	-
Bromochloromethane		-	ND (0.37)	-	ND (0.37)	-	ND (0.37)	ND (0.37)		ND (0.37)	-	ND (0.37)	-	ND (0.37)	-	ND (0.37)	-	ND (0.37)	-	ND (0.37)	-	ND (0.37)	-
Bromodichloromethane Bromoform		1	ND (0.23) ND (0.23)	-	ND (0.23) ND (0.23)	-	ND (0.23) ND (0.23)	ND (0.23) ND (0.23)		ND (0.23) ND (0.23)	-	ND (0.23) ND (0.23)	-	ND (0.23) ND (0.23)	-	ND (0.23) ND (0.23)	-	ND (0.23) ND (0.23)	-	ND (0.23) ND (0.23)	-	ND (0.23) ND (0.23)	
Bromotorm	+	4 10	ND (0.23) ND (0.42)	-	ND (0.23) ND (0.42)	-	ND (0.23) ND (0.42)	ND (0.23) ND (0.42)		ND (0.23) ND (0.42)	-	ND (0.23) ND (0.42)	+ -	ND (0.23) ND (0.42)	-	1.8 J	-	ND (0.23) ND (0.42)	-	ND (0.23) ND (0.42)	-	ND (0.23) ND (0.42)	<del></del>
2-Butanone (MEK)		300	ND (5.6)	-	ND (5.6)	-	ND (5.6)	26.5	-	ND (5.6)	-	ND (5.6)	-	ND (5.6)	-	ND (5.6)	-	ND (5.6)	-	ND (5.6)	-	ND (5.6)	-
Carbon disulfide		700	ND (0.25)	-	ND (0.25)	-	ND (0.25)	0.73		ND (0.25)	-	ND (0.25)	-	ND (0.25)		ND (0.25)	-	0.46	J -	ND (0.25)	-	ND (0.25)	-
Carbon tetrachloride Chlorobenzene		1 50	ND (0.22) ND (0.19)	-	ND (0.22) ND (0.19)	-	ND (0.22) ND (0.19)	ND (0.22) ND (0.19)		ND (0.22) ND (0.19)		ND (0.22) ND (0.19)	+ -	ND (0.22) ND (0.19)		1.6 ND (0.19)	-	ND (0.22) ND (0.19)	-	ND (0.22) ND (0.19)	-	ND (0.22) ND (0.19)	<del>                                     </del>
Chloroethane		5	ND (0.34)	-	ND (0.34)	-	ND (0.13)	ND (0.34)		ND (0.34)		ND (0.34)	-	ND (0.34)	-	ND (0.34)	-	ND (0.13)		ND (0.34)	-	ND (0.34)	-
Chloroform		70	ND (0.19)	-	ND (0.19)		ND (0.19)	1.2	-	0.29		0.56	J -	ND (0.19)		2.4	-	0.26		ND (0.19)	-	ND (0.19)	-
Chloromethane Cyclohexane		-	ND (0.41) ND (0.28)	-	ND (0.41) ND (0.28)	-	ND (0.41)	ND (0.41) ND (0.28)		ND (0.41) ND (0.28)		ND (0.41) ND (0.28)	-	ND (0.41) 0.63 J		0.68 J	-	ND (0.41) ND (0.28)		ND (0.41) ND (0.28)		ND (0.41) ND (0.28)	
1,2-Dibromo-3-chloropropane	<b>†</b>	0.02	ND (0.28) ND (0.99)	-	ND (0.28) ND (0.99)		ND (0.28) ND (0.99)	ND (0.28) ND (0.99)		ND (0.28) ND (0.99)		ND (0.28) ND (0.99)	1 - 1	ND (0.99)	-	ND (0.28) ND (0.99)	1 -	ND (0.28) ND (0.99)	-	ND (0.28) ND (0.99)		ND (0.28) ND (0.99)	
Dibromochloromethane		1	ND (0.15)	-	ND (0.15)	-	ND (0.15)	ND (0.15)		ND (0.15)		ND (0.15)	- 1	ND (0.15)	-	ND (0.15)	-	ND (0.15)	-	ND (0.15)	-	ND (0.15)	-
1,2-Dibromoethane		0.03 600	ND (0.23) ND (0.19)	-	ND (0.23) ND (0.19)	-	ND (0.23) ND (0.19)	ND (0.23) <b>0.52</b>		ND (0.23) ND (0.19)		ND (0.23) ND (0.19)	+ - +	ND (0.23) ND (0.19)		ND (0.23) ND (0.19)	<del>                                     </del>	ND (0.23) ND (0.19)	-	ND (0.23) ND (0.19)		ND (0.23) ND (0.19)	+
1,2-Dichlorobenzene 1,3-Dichlorobenzene		600	ND (0.19) ND (0.23)	<del>                                     </del>	ND (0.19) ND (0.23)		ND (0.19) ND (0.23)	ND (0.23)		ND (0.19) ND (0.23)		ND (0.19) ND (0.23)	+ +	ND (0.19) ND (0.23)		ND (0.19) ND (0.23)	<del>                                     </del>	ND (0.19) ND (0.23)	<del>                                     </del>	ND (0.19) ND (0.23)		ND (0.19) ND (0.23)	<del> +  </del>
1,4-Dichlorobenzene		75	ND (0.27)	-	ND (0.27)	-	ND (0.27)	ND (0.27)	-	ND (0.27)	-	ND (0.27)	-	ND (0.27)	-	ND (0.27)	-	ND (0.27)	-	ND (0.27)		ND (0.27)	-
Dichlorodifluoromethane		1000	ND (0.90) ND (0.17)	-	ND (0.90)	-	ND (0.90) ND (0.17)	ND (0.90)		ND (0.90)		ND (0.90)	-	ND (0.90)	-	ND (0.90)	-	ND (0.90)	-	ND (0.90)	-	ND (0.90) ND (0.17)	
1,1-Dichloroethane 1,2-Dichloroethane	+	50	ND (0.17) ND (0.18)	-	ND (0.17) ND (0.18)	-	ND (0.17) ND (0.18)	ND (0.17) 217	-	ND (0.17) 0.26	<del>                                     </del>	ND (0.17) 1.3	+ -	1.1 153	-	ND (0.17) 6.4	-	ND (0.17) 2.3	-	ND (0.17) ND (0.18)	-	ND (0.17) ND (0.18)	<del></del>
1,1-Dichloroethene		1	ND (0.51)	-	ND (0.51)	-	ND (0.51)	ND (0.51)	-	ND (0.51)	-	ND (0.51)	-	ND (0.51)	-	ND (0.51)	-	ND (0.51)	-	ND (0.51)	-	ND (0.51)	-
cis-1,2-Dichloroethene		70	ND (0.27)	-	ND (0.27)	-	ND (0.27)	ND (0.27)	-	77.9	-	ND (0.27)		6.1	-	ND (0.27)	-	ND (0.27)	-	ND (0.27)	-	0.27 J	-
trans-1,2-Dichloroethene 1,2-Dichloropropane		100	ND (0.65) ND (0.39)	-	ND (0.65) ND (0.39)	-	ND (0.65) ND (0.39)	ND (0.65) ND (0.39)	-	7.3 ND (0.39)	-	ND (0.65) ND (0.39)	-	ND (0.65) ND (0.39)	-	ND (0.65) ND (0.39)	-	ND (0.65) ND (0.39)	-	ND (0.65) ND (0.39)	-	ND (0.65) ND (0.39)	
cis-1,3-Dichloropropene		-	ND (0.21)	-	ND (0.21)	-	ND (0.33)	ND (0.21)	-	ND (0.21)	-	ND (0.21)		ND (0.21)	-	ND (0.21)	-	ND (0.21)	-	ND (0.21)	-	ND (0.21)	-
trans-1,3-Dichloropropene		-	ND (0.19)	-	ND (0.19)	-	ND (0.19)	ND (0.19)	-	ND (0.19)	-	ND (0.19)	-	ND (0.19)	-	ND (0.19)	-	ND (0.19)	-	ND (0.19)	-	ND (0.19)	-
1,4-Dioxane Ethylbenzene		0.4 700	ND (41) ND (0.27)	-	ND (41) ND (0.27)	-	ND (41) ND (0.27)	ND (41) ND (0.27)		ND (41) ND (0.27)	-	ND (41) ND (0.27)	-	ND (41) ND (0.27)	-	ND (41) ND (0.27)	-	ND (41) ND (0.27)	-	ND (41) ND (0.27)	-	ND (41) ND (0.27)	-
Freon 113		20000	ND (0.52)	-	ND (0.52)	-	ND (0.27)	ND (0.52)		ND (0.27) ND (0.52)	-	ND (0.52)		ND (0.27)	-	ND (0.52)	-	ND (0.27)		ND (0.27) ND (0.52)	-	ND (0.52)	-
2-Hexanone		-	ND (1.7)	-	ND (1.7)	-	ND (1.7)	ND (1.7)	-	ND (1.7)	-	ND (1.7)	-	ND (1.7)	-	ND (1.7)	-	ND (1.7)	-	ND (1.7)	÷	ND (1.7)	-
Isopropylbenzene		700 7000	ND (0.23)	-	ND (0.23) ND (1.9)	-	ND (0.23)	ND (0.23)		ND (0.23)	-	ND (0.23)	-	0.92 J ND (1.9)	-	ND (0.23) ND (1.9)	-	ND (0.23)	-	ND (0.23)	-	ND (0.23)	
Methyl Acetate Methylcyclohexane	-	7000	ND (1.9) ND (0.22)	-	ND (1.9) ND (0.22)	+ -	ND (1.9) ND (0.22)	ND (1.9) ND (0.22)		ND (1.9) ND (0.22)	1 1	ND (1.9) ND (0.22)	+ -	ND (1.9) ND (0.22)	-	ND (1.9) ND (0.22)	-	ND (1.9) ND (0.22)	-	ND (1.9) ND (0.22)	-	ND (1.9) ND (0.22)	<del></del>
Methyl Tert Butyl Ether		70	ND (0.24)	-	ND (0.24)	-	ND (0.24)	ND (0.24)		ND (0.24)		ND (0.24)	-	ND (0.24)	-	0.39 J	-	ND (0.24)		ND (0.24)	-	ND (0.24)	-
4-Methyl-2-pentanone(MIBK)		-	ND (1.0)	-	ND (1.0)	-	ND (1.0)	ND (1.0)	-	ND (1.0)	-	ND (1.0)	-	ND (1.0)		ND (1.0)	-	ND (1.0)		ND (1.0)	-	ND (1.0)	-
Methylene chloride Styrene		3 100	ND (0.73) ND (0.27)	-	ND (0.73) ND (0.27)	-	ND (0.73) ND (0.27)	1.2 ND (0.27)	J -	ND (0.73) ND (0.27)	-	3.7 ND (0.27)	-	ND (0.73) ND (0.27)	-	ND (0.73) ND (0.27)	-	ND (0.73) ND (0.27)		ND (0.73) ND (0.27)	-	ND (0.73) ND (0.27)	
1,1,2,2-Tetrachloroethane		1	ND (0.21)	-	ND (0.21)	-	ND (0.21)	1.5		ND (0.21)	-	0.23	J -	ND (0.21)	-	1.6	-	ND (0.21)		ND (0.21)		ND (0.21)	-
Tetrachloroethene		1	ND (0.40)	-	ND (0.40)	-	ND (0.40)	0.92	•	2.8		ND (0.40)	-	ND (0.40)	-	1.2	-	ND (0.40)	-	0.91	J -	1	-
Toluene 1.2.3-Trichlorobenzene		600	ND (0.16) ND (0.23)	-	ND (0.16) ND (0.23)	-	ND (0.16) ND (0.23)	ND (0.16) 0.4		ND (0.16) ND (0.23)		ND (0.16) ND (0.23)	+	ND (0.16) ND (0.23)	+ -	ND (0.16) ND (0.23)	<del>                                     </del>	ND (0.16) ND (0.23)	-	ND (0.16) ND (0.23)	+ -	ND (0.16) ND (0.23)	+
1,2,4-Trichlorobenzene	<del></del>	9	ND (0.23)	-	ND (0.23)		ND (0.23)	1.5		ND (0.23)		ND (0.23)	+	ND (0.23)	-	ND (0.23) ND (0.21)	<del>  -</del>	ND (0.23)	-	ND (0.23)		ND (0.21)	
1,1,1-Trichloroethane		30	ND (0.25)	-	ND (0.25)	- 1	ND (0.25)	ND (0.25)	-	ND (0.25)	-	ND (0.25)	-	0.62 J	-	ND (0.25)	-	ND (0.25)	-	ND (0.25)	-	ND (0.25)	-
1,1,2-Trichloroethane Trichloroethene		3	ND (0.21) ND (0.22)	-	ND (0.21) ND (0.22)	-	ND (0.21) ND (0.22)	ND (0.21) 2.3		ND (0.21) 76.8		ND (0.21) 0.96	+	ND (0.21) 37.4	-	ND (0.21) 2.1		ND (0.21) 0.9	-	ND (0.21) 11.2		ND (0.21) 10.2	<del></del>
Trichlorofluoromethane		2000	ND (0.22) ND (0.43)	<del>                                     </del>	ND (0.22) ND (0.43)	+ - +	ND (0.22) ND (0.43)	ND (0.43)		ND (0.43)		ND (0.43)	<del>'                                     </del>	ND (0.43)	+ -	ND (0.43)	<del>                                     </del>	ND (0.43)	-	ND (0.43)		ND (0.43)	<del> + -</del>
Vinyl chloride		1	ND (0.15)	-	ND (0.15)	-	ND (0.15)	ND (0.15)		ND (0.15)		ND (0.15)	-	ND (0.15)	-	ND (0.15)	-	ND (0.15)	-	ND (0.15)	-	ND (0.15)	-
m,p-Xylene o-Xylene		-	ND (0.38) ND (0.17)	-	ND (0.38) ND (0.17)	-	ND (0.38) ND (0.17)	ND (0.38) ND (0.17)		ND (0.38) ND (0.17)	-	ND (0.38) ND (0.17)	+ - +	ND (0.38)	-	ND (0.38) ND (0.17)	-	ND (0.38) ND (0.17)	-	ND (0.38) ND (0.17)	-	ND (0.38) ND (0.17)	-
o-Xylene Xylene (total)	<del>-  </del>	1000	ND (0.17) ND (0.17)	-	ND (0.17) ND (0.17)		ND (0.17) ND (0.17)	ND (0.17) ND (0.17)		ND (0.17) ND (0.17)	-	ND (0.17) ND (0.17)	+ : +	1.1	+ -	ND (0.17) ND (0.17)	<del>                                     </del>	ND (0.17) ND (0.17)	-	ND (0.17) ND (0.17)	+ -	ND (0.17)	-
Total VOCs		-	0		0		0	489.66		190.75		6.75		202.14		29.97		35.22		21.71		22.37	
CC/MS Valatile TIS																							
GC/MS Volatile TIC Total TIC, Volatile				1	1 0 1	1 - 1	0	1 ^ 1	1	1 0 1	1		1	1 202 1.	<u> </u>		1 1		1	0			
Total Alkanes	<del></del>	-	0	-	0		0	0	-	0	-	0	+	28.3 J	-	0	<del>  -</del>	0	-	0	-	0	<del>- H</del>
															•	· · · · ·					•		
Metals Analysis																							
Chromium		70 300		<10 <100		<10 <100			12200 ° <330 °	1260 <sup>a</sup>	1300 <100	25.1	<10	<10		136							<b>26.3</b> <100
Sodium	<del>  </del>	50000	<10000		<10000			5560000		1260000		14200		25000		526000	- 04/	4260000		238000		357000	-
									· .														
General Chemistry																							
Solids, Total Dissolved Sulfate		500000 250000	<10000 <10000		<10000 <10000			24100000 10100000	-	4620000 1170000	-	123000 54600		220000 99800	-	1760000 874000		13200000 3520000		971000 470000	-	1000000 480000	<del>                                     </del>
Sanate	I	230000	10000	1	10000		-	1010000	1	1170000	-	34000	-	33000	-	074000	1	3320000	1	470000	-	40000	

	Comple ID	20ND2 IW1 PT	2 2PND2 IM/1 PT	2 2PND2 MW 105	2PND2 MW 108	2PND2 MW 145D	2PND2 MW 1450	2PND2 MW 1455	2PND2 MM 1455	2PND4 ER	2PND4 ER 2PND4 E	3PND4 ER	2RND4 TRIP BLAN	NV 3PND4 ISCO MW	1 2PND4 ISCO MM	1 2PND4 ISCO MW	2 2PNID4 ISCO MIN	2 2RND4 ISCO-MW-	2 2PND4 ISCO MW 2	2PND4 ISCO MW 4	2RND4_ISCO-MW-4
	Sample ID  NJ CLASS IIA  Sample Date	JC6498-12	-2 ZKND3_IW1-B1 JC6498-12F	Z ZKNDS_IVIW-103	JC6498-10F	JC6498-3	JC6498-3F	JC6498-2	JC6498-2F	JC8568-10	JC8568-10F JC8568-2	JC8568-20F	JC8568-21	JC8568-17	JC8568-17F	-1 2KND4_I3CO-WW-	JC8568-16F	Z ZKND4_13CO-1VIW-: JC8568-8	JC8568-8F	JC8568-2	JC8568-2F
	Sample Type GROUNDWATER QUALITY  CRITERIA (7/22/2010)	10/16/2015	10/16/2015	10/16/2015	10/16/2015	10/15/2015	10/15/2015	10/15/2015	10/15/2015	11/12/2015	11/12/2015 11/13/20:		11/13/2015	11/13/2015	11/13/2015	11/13/2015	11/13/2015	11/12/2015	11/12/2015	11/12/2015	11/12/2015
	Matrix ug/l	GW	GW-FILTERED	GW	GW-FILTERED	GW	GW-FILTERED	GW	GW-FILTERED	WATER	WATER-FILTERED WATER	WATER-FILTERE	D WATER	GW	GW-FILTERED	GW	GW-FILTERED	GW	GW-FILTERED	GW	GW-FILTERED
	Unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Volatile Organic Compound						ND (2.2)			<u> </u>												
Acetone Benzene	6000	11.3 ND (0.24)	-	ND (3.3) ND (0.24)	-	ND (3.3) ND (0.24)	-	ND (3.3) ND (0.24)	-	ND (3.3) ND (0.24)	- ND (3.3) - ND (0.24	-	ND (3.3) ND (0.24)	ND (3.3) ND (0.24)	-	187 0.86	-	21.9 ND (0.24)	-	ND (3.3) ND (0.24)	-
Bromochloromethane	-	ND (0.24)	-	ND (0.24)	-	ND (0.37)	-	ND (0.24)	-	ND (0.37)	- ND (0.24	1 :	ND (0.24)	ND (0.37)	-	ND (0.37)	-	ND (0.24)	-	ND (0.24)	<del> </del>
Bromodichloromethane	1	ND (0.23)	-	ND (0.23)	-	ND (0.23)	-	ND (0.23)	-	ND (0.23)	- ND (0.23	-	ND (0.23)	ND (0.23)	-	ND (0.23)	-	ND (0.23)	-	ND (0.23)	-
Bromoform	4	ND (0.23)	-	ND (0.23)	-	ND (0.23)	-	ND (0.23)	-	ND (0.23)	- ND (0.23	-	ND (0.23)	ND (0.23)	-	ND (0.23)		ND (0.23)	-	ND (0.23)	-
Bromomethane 2-Butanone (MEK)	10 300	ND (0.42) ND (5.6)	-	ND (0.42) ND (5.6)	-	ND (0.42) ND (5.6)	-	ND (0.42) ND (5.6)		ND (0.42) ND (5.6)	- ND (0.42 - ND (5.6)	+ :	ND (0.42) ND (5.6)	ND (0.42) ND (5.6)	-	0.8 14.8	J -	ND (0.42) ND (5.6)	-	ND (0.42) ND (5.6)	-
Carbon disulfide	700	ND (0.25)	-	ND (0.25)	-	ND (0.25)	-	ND (0.25)	-	ND (0.25)	- ND (0.25	-	ND (0.25)	ND (0.25)	-	0.81	J -	ND (0.25)	-	6.8	-
Carbon tetrachloride	1	ND (0.22)	-	ND (0.22)		0.44 J		0.45 J	-	ND (0.22)	- ND (0.22	-	ND (0.22)	ND (0.22)		ND (0.22)	-	ND (0.22)	-	ND (0.22)	-
Chlorobenzene	50	ND (0.19) ND (0.34)	-	ND (0.19) ND (0.34)	-	ND (0.19) ND (0.34)	-	ND (0.19) ND (0.34)	-	ND (0.19) ND (0.34)	- ND (0.19 - ND (0.34		ND (0.19) ND (0.34)	ND (0.19) ND (0.34)		ND (0.19) ND (0.34)	-	ND (0.19) ND (0.34)	-	ND (0.19) ND (0.34)	-
Chloroethane Chloroform	70	ND (0.34)		ND (0.34)	-	0.55 J	-	0.56 J	-	ND (0.34) ND (0.19)	- ND (0.34		ND (0.34) ND (0.19)	ND (0.34) ND (0.19)	-	1.3	-	0.27	J -	ND (0.54)	
Chloromethane	-	ND (0.41)	-	ND (0.41)	-	ND (0.41)	-	ND (0.41)	-	ND (0.41)	- ND (0.41	-	ND (0.41)	ND (0.41)		1.1	-	ND (0.41)	-	ND (0.41)	-
Cyclohexane	-	ND (0.28)		ND (0.28)		ND (0.28)	-	ND (0.28)		ND (0.28)	- ND (0.28	-	ND (0.28)	ND (0.28)		ND (0.28)	-	ND (0.28)	-	ND (0.28)	-
1,2-Dibromo-3-chloropropar Dibromochloromethane	ne 0.02	ND (0.99) ND (0.15)		ND (0.99) ND (0.15)		ND (0.99) ND (0.15)		ND (0.99) ND (0.15)		ND (0.99) ND (0.15)	- ND (0.99 - ND (0.15	+ -	ND (0.99) ND (0.15)	ND (0.99) ND (0.15)		ND (0.99) ND (0.15)	+	ND (0.99) ND (0.15)	1 -	ND (0.99) ND (0.15)	+ : +
1,2-Dibromoethane	0.03	ND (0.23)	-	ND (0.23)	-	ND (0.23)	-	ND (0.23)	-	ND (0.23)	- ND (0.23		ND (0.23)	ND (0.23)		ND (0.23)		ND (0.23)	-	ND (0.23)	
1,2-Dichlorobenzene	600	ND (0.19)	-	ND (0.19)		ND (0.19)		ND (0.19)		ND (0.19)	- ND (0.19	-	ND (0.19)	ND (0.19)		0.47	1 -	ND (0.19)	-	ND (0.19)	
1,3-Dichlorobenzene 1,4-Dichlorobenzene	600 75	ND (0.23) ND (0.27)	-	ND (0.23) ND (0.27)		ND (0.23) ND (0.27)		ND (0.23) ND (0.27)		ND (0.23) ND (0.27)	- ND (0.23 - ND (0.27	+ -	ND (0.23) ND (0.27)	ND (0.23) ND (0.27)		ND (0.23) ND (0.27)	+	ND (0.23) ND (0.27)	+	ND (0.23) ND (0.27)	+
Dichlorodifluoromethane	1000	ND (0.27)		ND (0.27)		ND (0.27) ND (0.90)		ND (0.27) ND (0.90)		ND (0.27)	- ND (0.27		ND (0.27) ND (0.90)	ND (0.27) ND (0.90)		ND (0.27)	1 -	ND (0.27) ND (0.90)	1 : 1	ND (0.27) ND (0.90)	<del>                                     </del>
1,1-Dichloroethane	50	ND (0.17)	-	ND (0.17)	-	ND (0.17)	-	ND (0.17)		ND (0.17)		-	ND (0.17)	ND (0.17)	-	ND (0.17)	-	ND (0.17)	-	ND (0.17)	-
1,2-Dichloroethane	2	ND (0.18) ND (0.51)	-	9.1 ND (0.51)	-	ND (0.18) ND (0.51)	-	ND (0.18) ND (0.51)	-	ND (0.18) ND (0.51)	- ND (0.18 - ND (0.51	-	ND (0.18) ND (0.51)	3.6 ND (0.51)	-	255 ND (0.51)	-	0.29 ND (0.51)	J -	1.3 ND (0.51)	-
cis-1.2-Dichloroethene	70	4.2	-	ND (0.31)	-	ND (0.31) ND (0.27)	-	ND (0.31) ND (0.27)	-	ND (0.31)	- ND (0.31	+ : +	ND (0.31) ND (0.27)	ND (0.27)	-	ND (0.27)	-	75.7	-	ND (0.51) ND (0.27)	-
trans-1,2-Dichloroethene	100	0.72	J -	ND (0.65)	-	ND (0.65)	-	ND (0.65)	-	ND (0.65)	- ND (0.65	-	ND (0.65)	ND (0.65)	-	ND (0.65)	-	5.7	-	ND (0.65)	-
1,2-Dichloropropane	1	ND (0.39)	-	ND (0.39)	-	ND (0.39)	-	ND (0.39)	-	ND (0.39)	- ND (0.39	-	ND (0.39)	ND (0.39)	-	ND (0.39)	-	ND (0.39)	-	ND (0.39)	-
cis-1,3-Dichloropropene trans-1,3-Dichloropropene		ND (0.21) ND (0.19)	-	ND (0.21) ND (0.19)	-	ND (0.21) ND (0.19)	-	ND (0.21) ND (0.19)	-	ND (0.21) ND (0.19)	- ND (0.21 - ND (0.19	-	ND (0.21) ND (0.19)	ND (0.21) ND (0.19)	-	ND (0.21) ND (0.19)	-	ND (0.21) ND (0.19)	-	ND (0.21) ND (0.19)	-
1,4-Dioxane	0.4	ND (41)	-	ND (41)	-	ND (41)	-	ND (41)		ND (41)	- ND (41)	-	ND (41)	ND (41)	-	ND (41)	-	ND (41)		ND (41)	
Ethylbenzene	700	ND (0.27)	-	ND (0.27)		ND (0.27)		ND (0.27)	-	ND (0.27)	- ND (0.27	-	ND (0.27)	ND (0.27)		ND (0.27)	-	ND (0.27)	-	ND (0.27)	-
Freon 113	20000	ND (0.52) ND (1.7)	-	ND (0.52) ND (1.7)		ND (0.52) ND (1.7)		ND (0.52) ND (1.7)		ND (0.52) ND (1.7)	- ND (0.52 - ND (1.7)	-	ND (0.52) ND (1.7)	ND (0.52) ND (1.7)		ND (0.52)	-	ND (0.52) ND (1.7)	-	ND (0.52) ND (1.7)	-
2-Hexanone Isopropylbenzene	700	ND (1.7)		ND (1.7) ND (0.23)		ND (1.7)		ND (1.7)		ND (1.7)	- ND (1.7)	-	ND (1.7)	ND (1.7)		ND (1.7)	-	ND (1.7) ND (0.23)	-	ND (1.7)	-
Methyl Acetate	7000	ND (1.9)	-	ND (1.9)	-	ND (1.9)		ND (1.9)		ND (1.9)	- ND (1.9)	-	ND (1.9)	ND (1.9)	-	ND (1.9)	-	ND (1.9)	-	ND (1.9)	-
Methylcyclohexane	-	ND (0.22)	-	ND (0.22)		ND (0.22)		ND (0.22)	-	ND (0.22)	- ND (0.22	-	ND (0.22)	ND (0.22)	_	ND (0.22)	-	ND (0.22)	-	ND (0.22)	-
Methyl Tert Butyl Ether 4-Methyl-2-pentanone(MIBK	70	ND (0.24) ND (1.0)	-	ND (0.24) ND (1.0)		ND (0.24) ND (1.0)		ND (0.24) ND (1.0)	-	ND (0.24) ND (1.0)	- ND (0.24 - ND (1.0)	-	ND (0.24) ND (1.0)	ND (0.24) ND (1.0)		ND (0.24) ND (1.0)	-	ND (0.24) ND (1.0)	-	ND (0.24) ND (1.0)	-
Methylene chloride	3	ND (1.0)	-	ND (1.0) ND (0.73)		ND (1.0) ND (0.73)		ND (1.0) ND (0.73)		ND (1.0)	- ND (1.0)	-	ND (1.0)	ND (1.0) ND (0.73)		1.1	J -	ND (1.0) ND (0.73)	-		
Styrene	100	ND (0.27)	-	ND (0.27)	-	ND (0.27)	-	ND (0.27)	-	ND (0.27)	- ND (0.27	-	ND (0.27)	ND (0.27)		ND (0.27)	-	ND (0.27)	-	ND (0.27)	
1,1,2,2-Tetrachloroethane	1	ND (0.21)		ND (0.21)		ND (0.21)		ND (0.21)		ND (0.21)	- ND (0.21	-	ND (0.21) ND (0.40)	ND (0.21)	-	1.5	-	ND (0.21)	-	110 (0.21)	-
Tetrachloroethene Toluene	600	0.49 . ND (0.16)	J -	ND (0.40) ND (0.16)		ND (0.40) ND (0.16)		ND (0.40) ND (0.16)		ND (0.40) ND (0.16)	- ND (0.40 - ND (0.16	-	ND (0.40) ND (0.16)	ND (0.40) ND (0.16)	-	ND (0.16)	-	ND (0.16)	-	ND (0.40) ND (0.16)	<del></del>
1,2,3-Trichlorobenzene	-	ND (0.23)		ND (0.23)	-	ND (0.23)	-	ND (0.23)	-	ND (0.23)	- ND (0.23		ND (0.23)	ND (0.23)		ND (0.23)		ND (0.23)	<u> </u>	ND (0.23)	<u> </u>
1,2,4-Trichlorobenzene	9	ND (0.21)	-	ND (0.21)		ND (0.21)		ND (0.21)		ND (0.21)	- ND (0.21	-	ND (0.21)	ND (0.21)		0.99	1 -	ND (0.21)	-	ND (0.21)	
1,1,1-Trichloroethane 1,1,2-Trichloroethane	30	ND (0.25) ND (0.21)		ND (0.25) ND (0.21)		ND (0.25) ND (0.21)		ND (0.25) ND (0.21)		ND (0.25) ND (0.21)	- ND (0.25 - ND (0.21	1	ND (0.25) ND (0.21)	ND (0.25) ND (0.21)		ND (0.25) ND (0.21)	+	ND (0.25) ND (0.21)	-	ND (0.25) ND (0.21)	+
Trichloroethene	1	13.7	-	1.1	<u> </u>	ND (0.22)		ND (0.22)		ND (0.21)	- ND (0.22	-	ND (0.21)	0.41		4	-	80.1	- 1	0.88 J	<u> </u>
Trichlorofluoromethane	2000	ND (0.43)		ND (0.43)	-	ND (0.43)		ND (0.43)	-	ND (0.43)	- ND (0.43		ND (0.43)	ND (0.43)		ND (0.43)	-	ND (0.43)	-	ND (0.43)	-
Vinyl chloride m.p-Xvlene	1	ND (0.15) ND (0.38)	-	ND (0.15) ND (0.38)	-	ND (0.15) ND (0.38)	-	ND (0.15) ND (0.38)		ND (0.15) ND (0.38)	- ND (0.15 - ND (0.38	-	ND (0.15) ND (0.38)	ND (0.15) ND (0.38)	-	ND (0.15) ND (0.38)	-	ND (0.15) ND (0.38)		ND (0.15) ND (0.38)	+
m,p-Xylene o-Xylene	-	ND (0.38) ND (0.17)	-	ND (0.38) ND (0.17)	-	ND (0.38) ND (0.17)	-	ND (0.38) ND (0.17)	-	ND (0.38) ND (0.17)	- ND (0.38		ND (0.38) ND (0.17)	ND (0.38) ND (0.17)	-	ND (0.38) ND (0.17)	<del>                                     </del>	ND (0.38) ND (0.17)	-	ND (0.38) ND (0.17)	+
Xylene (total)	1000	ND (0.17)	-	ND (0.17)	- 1	ND (0.17)	-	ND (0.17)		ND (0.17)	- ND (0.17	<u> </u>	ND (0.17)	ND (0.17)	-	ND (0.17)	- 1	ND (0.17)	-	ND (0.17)	- 1
Total VOCs	-	30.41		10.2		0.99		1.01		0	0		0	4.01		471.33		186.86		11.34	
GC/MS Volatile TIC																					
Total TIC, Volatile		1 0 1	1 - 1	0 1	-	I 0 I	_ 1	0	. 1	0	I I _ n	1 - 1	0		1 - 1	0 1	-	0 1	1 - 1	I 0 I	
Total Alkanes	-	ő	-	0		0	-	0	-	0	- 0		0	0	-	0		0	-	0	
Metals Analysis	70	11403	1240	1 40	410	1 410	40	1 410	410	1 .40	1 40 11 40			1	1	00503	0400	1400	1222	49.0	410
Chromium	70 300	1140 <sup>a</sup>	1210 <100	<10	<10 <100	<10		<10		<10	<10 <10 <10 -	<10 <100	1 -	<10	<10 <100	9050 <sup>a</sup>	9190 142		1230 <100	48.8	
Sodium	50000	519000 a		63400		61700		65900		<10000		-	<u> </u>	16300	-	5810000	-	1140000	-	13400	
_																					
General Chemistry		4746	, .	405		404655		1 424000		1 44655	1 1		_		,	460		272	,	420000	
Solids, Total Dissolved Sulfate	500000 250000	1740000 610000		405000 175000		404000 132000	-	431000 137000		11000 <10000			+ -	242000 129000	-	16900000 8560000	+	3720000 1080000	-	120000 56300	+
	250000	010000	1	1,5000		101000		10,000		-10000	(20000		1	12,000	ı	030000		100000		50500	

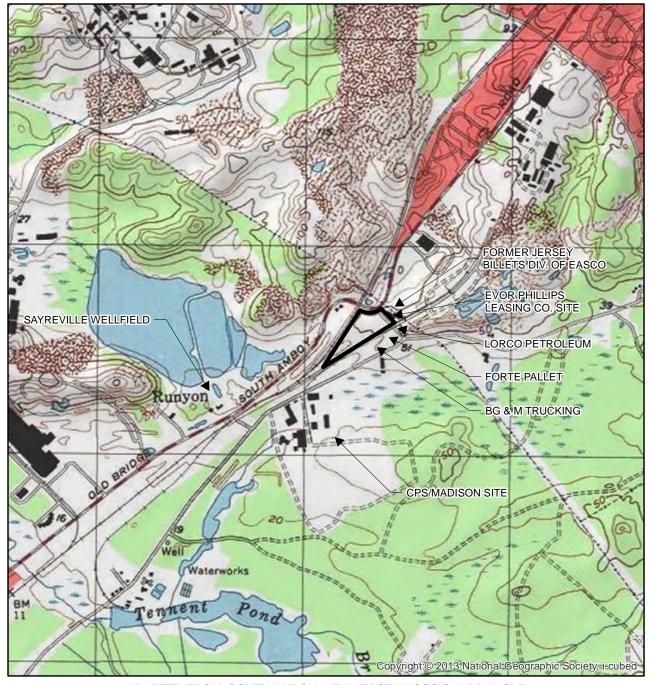
	Sample ID		2RND4 ISCO-MW-5	2RND4 ISCO-MW	-5 2RND4 ISCO-MW-6	6 2RND4 ISCO-MW-I	2RND4 ISCO-MW-7	2RND4 ISCO-MW-7	2RND4 ISCO-MW-	8 2RND4 ISCO-MW-8	2RND4 ISCO-MW-9	2RND4 ISCO-MW-9	2RND4 IW1-BT-2	2RND4 IW1-BT-2	2RND4 IW1-DR-1	2RND4 IW1-DR-1	2RND4 MW-10S	2RND4 MW-10S	2RND4 DUP	2RND4 DUP 2RND4	MW-11I 2RND4	4 MW-11I
9	Sample Date NJ CLAS		JC8568-18	JC8568-18F	JC8568-19	JC8568-19F	JC8568-13	JC8568-13F	JC8568-12	JC8568-12F	JC8568-7	JC8568-7F	JC8568-3	JC8568-3F	JC8568-1	JC8568-1F	JC8568-6	JC8568-6F	JC8568-9	JC8568-9F JC8	668-11 JC85	568-11F
	Sample Type GROUNDWATE CRITERIA (7/		11/13/2015	11/13/2015	11/13/2015	11/13/2015	11/13/2015	11/13/2015	11/13/2015	11/13/2015	11/12/2015	11/12/2015	11/12/2015	11/12/2015	11/12/2015	11/12/2015	11/12/2015	11/12/2015	11/12/2015	11/12/2015 11/1	3/2015 11/1	13/2015
	Matriy		GW	GW-FILTERED	GW	GW-FILTERED	GW	GW-FILTERED	GW	GW-FILTERED	GW	GW-FILTERED	GW	GW-FILTERED	GW	GW-FILTERED	GW	GW-FILTERED	GW	GW-FILTERED	SW GW-F	FILTERED
	Unit ug/l		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L			g/L ı	ug/L
Volatile Organic Compounds (VC																						
Acetone	6000	)	ND (3.3)		ND (3.3)	-	5.3 J	-	37.0	-	7.3 J	-	7.1 J		ND (3.3)		ND (3.3)		ND (3.3)			
Benzene	1		1.2 ND (0.37)	-	ND (0.24)	-	ND (0.24)	-	ND (0.24)	-	ND (0.24)	-	ND (0.24)	-	ND (0.24)	-	ND (0.24)		ND (0.24) ND (0.37)	- ND (0		
Bromochloromethane Bromodichloromethane	1		ND (0.37) ND (0.23)	-	ND (0.37) ND (0.23)	-	ND (0.37) ND (0.23)	-	ND (0.37) ND (0.23)	-	ND (0.37) ND (0.23)	-	ND (0.37) ND (0.23)	-	ND (0.37) ND (0.23)	-	ND (0.37) ND (0.23)		ND (0.37) ND (0.23)	- ND (0	.37) -	
Bromoform	4		ND (0.23)	-	ND (0.23)	-	ND (0.23)	-	ND (0.23)	-		-	ND (0.23)	-	ND (0.23)	-		-	ND (0.23)	- ND (0	.23)	-
Bromomethane	10		ND (0.42)		ND (0.42)	-	ND (0.42)		ND (0.42)		ND (0.42)	-	ND (0.42)		ND (0.42)		ND (0.42)	-	ND (0.42)	- ND (0	.42) -	-
2-Butanone (MEK)	300		ND (5.6)		ND (5.6)	-	ND (5.6)	-	ND (5.6)	-	ND (5.0)	-	ND (5.6)	-	ND (5.6)	-	140 (5.0)		ND (5.6)	- ND (		
Carbon disulfide Carbon tetrachloride	700		ND (0.25) ND (0.22)		0.28 ND (0.22)	J -	0.35 J 0.93 J	-	0.35 . ND (0.22)	J -	ND (0.25) ND (0.22)	-	ND (0.25) ND (0.22)	-	0.64 . ND (0.22)		ND (0.23)		ND (0.25) ND (0.22)	- ND (0		
Chlorobenzene	50		ND (0.22) ND (0.19)		ND (0.22)	-	ND (0.19)	-	ND (0.22)	-	ND (0.22) ND (0.19)	-	ND (0.22) ND (0.19)	-	ND (0.22) ND (0.19)	-	ND (0.22) ND (0.19)		ND (0.22)	- ND (		
Chloroethane	5		ND (0.34)	-	ND (0.34)	-	ND (0.34)	-	ND (0.34)	-	ND (0.34)	-	ND (0.34)	-	ND (0.34)	-	ND (0.34)		ND (0.34)	- ND (0		-
Chloroform	70		ND (0.19)		ND (0.19)	-	1.6		ND (0.19)	-	140 (0.13)	-	ND (0.19)	-	ND (0.19)	-	ND (0.19)		ND (0.19)			
Chloromethane	-		ND (0.41)		ND (0.41)	-	0.54 J		0.62		ND (0.41)		ND (0.41)		ND (0.41)		ND (0.41)		ND (0.41)			
Cyclohexane 1,2-Dibromo-3-chloropropane	0.02		1 J ND (0.99)		ND (0.28) ND (0.99)	-	ND (0.28) ND (0.99)	-	ND (0.28) ND (0.99)		ND (0.28) ND (0.99)		ND (0.28) ND (0.99)		ND (0.28) ND (0.99)		ND (0.28) ND (0.99)		ND (0.28) ND (0.99)			
Dibromochloromethane	1		ND (0.35)		ND (0.15)	-	ND (0.15)	-	ND (0.35)	-			ND (0.15)	-	ND (0.15)	-			ND (0.35)			-
1,2-Dibromoethane	0.03		ND (0.23)	-	ND (0.23)	-	ND (0.23)	-	ND (0.23)	-	ND (0.23)	-	ND (0.23)	-	ND (0.23)	-	ND (0.23)	-	ND (0.23)	- ND (0	.23) -	
1,2-Dichlorobenzene	600		ND (0.19)	-	ND (0.19)	-	ND (0.19)	- 1	ND (0.19)	-	ND (0.19)		ND (0.19)	-	ND (0.19)	-	ND (0.19)		ND (0.19)	- ND (0		$-\Box$
1,3-Dichlorobenzene	600		ND (0.23) ND (0.27)	-	ND (0.23) ND (0.27)	-	ND (0.23)	<del></del>	ND (0.23) ND (0.27)		ND (0.23)	-	ND (0.23)	<del>                                     </del>	ND (0.23) ND (0.27)	+	ND (0.23) ND (0.27)		ND (0.23) ND (0.27)	- ND (0		
1,4-Dichlorobenzene Dichlorodifluoromethane	75 1000		ND (0.27) ND (0.90)		ND (0.27) ND (0.90)	-	ND (0.27) ND (0.90)	<del>                                     </del>	ND (0.27) ND (0.90)	-	ND (0.27) ND (0.90)	-	ND (0.27) ND (0.90)	<del>                                     </del>	ND (0.27) ND (0.90)	<del>                                     </del>	ND (0.27) ND (0.90)		ND (0.27) ND (0.90)	- ND (0		
1,1-Dichloroethane	50		1.3		ND (0.17)		ND (0.17)		ND (0.17)	-	ND (0.17)	-	ND (0.17)	1 - 1	ND (0.17)		ND (0.17)	1 - 1	ND (0.17)	- ND (0		
1,2-Dichloroethane	2		167	-	1.6	-	4	-	5.7	-	ND (0.18)	-	ND (0.18)	-	ND (0.18)	-	14.4	-	14.1	- ND (0		$-\Box$
1,1-Dichloroethene	1 70		ND (0.51)	-	ND (0.51) 0.92		ND (0.51)	-	ND (0.51)	-	ND (0.51) 0.33 J	-	ND (0.51)	-	ND (0.51)	-	ND (0.51)	-	ND (0.51) 0.76 J	- ND (0		
cis-1,2-Dichloroethene trans-1.2-Dichloroethene	70 100		9.1 ND (0.65)	-	ND (0.65)	J -	ND (0.27) ND (0.65)	-	ND (0.27) ND (0.65)	-	ND (0.65)	-	2.9 ND (0.65)	-	ND (0.27) ND (0.65)	-	0.8 J ND (0.65)	-	ND (0.65)	- ND (0		
1,2-Dichloropropane	1		ND (0.39)	-	ND (0.39)	-	ND (0.39)	-	ND (0.39)	-	ND (0.39)	-	ND (0.39)	-	ND (0.39)	-	ND (0.39)	-	ND (0.39)	- ND (0		
cis-1,3-Dichloropropene	-		ND (0.21)	-	ND (0.21)	-	ND (0.21)	-	ND (0.21)	-	ND (0.21)	-	ND (0.21)	-	ND (0.21)	-	ND (0.21)	-	ND (0.21)	- ND (0		
trans-1,3-Dichloropropene	-		ND (0.19)	-	ND (0.19)	-	ND (0.19)	-	ND (0.19)	-	ND (0.19)	-	ND (0.19)	-	ND (0.19)	-	ND (0.19)		ND (0.19)	- ND (0		
1,4-Dioxane Ethylbenzene	0.4 700		ND (41) ND (0.27)	-	ND (41) ND (0.27)	-	ND (41) ND (0.27)	-	ND (41) ND (0.27)	-	ND (41) ND (0.27)	-	ND (41) ND (0.27)	-	ND (41) ND (0.27)	-	ND (41) ND (0.27)		ND (41) ND (0.27)	- IND		-+
Freon 113	2000		ND (0.52)	-	ND (0.52)	-	ND (0.52)	-	ND (0.52)	-	ND (0.52)	-	ND (0.52)	-	ND (0.52)	-		-	ND (0.52)	- ND (0		
2-Hexanone	-		ND (1.7)	-	ND (1.7)	-	ND (1.7)	-	ND (1.7)	-	ND (1.7)	-	ND (1.7)	-	ND (1.7)	-	ND (1.7)	-	ND (1.7)	- ND (	1.7) -	
Isopropylbenzene	700		1.2	-	ND (0.23)	-	ND (0.23)	-	ND (0.23)	-	ND (0.23)	-	ND (0.23)	-	ND (0.23)	-	140 (0.23)		ND (0.23)	- ND (0		
Methyl Acetate	7000	1	ND (1.9)	-	ND (1.9)	-	ND (1.9)	-	ND (1.9)	-	ND (1.9)	-	ND (1.9)	-	ND (1.9)	-	ND (1.9)		ND (1.9)	- ND (		
Methylcyclohexane Methyl Tert Butyl Ether	70		ND (0.22) ND (0.24)	-	ND (0.22) ND (0.24)	-	ND (0.22) 0.48 J	-	ND (0.22) 0.42		ND (0.22) ND (0.24)	-	ND (0.22) ND (0.24)	-	ND (0.22) ND (0.24)	-	ND (0.22) ND (0.24)		ND (0.22) ND (0.24)			
4-Methyl-2-pentanone(MIBK)	-		ND (1.0)	-	ND (1.0)	-	ND (1.0)	-	ND (1.0)	-		-	ND (1.0)	-	ND (1.0)	-		-	ND (1.0)	- ND (		-
Methylene chloride	3		ND (0.73)		1.3	J -	ND (0.73)	-	ND (0.73)		ND (0.73)	-	ND (0.73)	-	ND (0.73)	-	0.92 J	-	0.9 J	- ND (0	.73)	-
Styrene	100		ND (0.27)		ND (0.27)	-	ND (0.27)		ND (0.27) ND (0.21)	-	145 (0.27)	-	ND (0.27)	-	140 (0.27)		ND (0.27)	-	ND (0.27) ND (0.21)	- ND (0		
1,1,2,2-Tetrachloroethane Tetrachloroethene	1		ND (0.21) ND (0.40)		ND (0.21) ND (0.40)	-	0.4 J 0.84 J		ND (0.21) ND (0.40)	-	ND (0.21) 0.88 J	-	ND (0.21) 0.42 J	-	110 (0.21)		ND (0.21) ND (0.40)		ND (0.21) ND (0.40)	- ND (0		
Toluene	600		ND (0.16)	-	ND (0.16)	-	ND (0.16)		ND (0.16)	-	ND (0.16)	-	ND (0.16)	-		-			ND (0.16)	- ND (0		_
1,2,3-Trichlorobenzene	-		ND (0.23)	-	ND (0.23)	-	ND (0.23)		ND (0.23)	-	ND (0.23)	-	ND (0.23)	-	ND (0.23)	-	110 (0.25)	-	ND (0.23)	- ND (0	.23)	
1,2,4-Trichlorobenzene	9		ND (0.21)	-	ND (0.21)	-	ND (0.21)		ND (0.21)	-	ND (0.21)	-	ND (0.21)	-	ND (0.21)	-	140 (0.22)		ND (0.21)	- ND (0		$ \mp$
1,1,1-Trichloroethane 1,1,2-Trichloroethane	30		0.9 J ND (0.21)		ND (0.25) ND (0.21)	-	ND (0.25) ND (0.21)		ND (0.25) ND (0.21)	-	ND (0.25) ND (0.21)	-	ND (0.25) ND (0.21)	+ -	ND (0.25) ND (0.21)		ND (0.25) ND (0.21)		ND (0.25) ND (0.21)	- ND (0		-+
Trichloroethene	1		52.6		1.9	-	1.6	-	0.27	, ·	12.6	-	10.4	+ - +	1.4	<del>                                     </del>	1.9		1.9	- ND (0		
Trichlorofluoromethane	2000	1	ND (0.43)		ND (0.43)	-	ND (0.43)	-	ND (0.43)	-	ND (0.43)		ND (0.43)	-	ND (0.43)	-	ND (0.43)		ND (0.43)	- ND (0	.43)	-
Vinyl chloride	1		ND (0.15)	-	ND (0.15)	-	ND (0.15)	-	ND (0.15)	-	110 (0.15)	-	ND (0.15)	- 1	ND (0.15)	-	ND (0.15)		ND (0.15)	- ND (0		
m,p-Xylene o-Xylene	-		0.4 J 0.89 J	-	ND (0.38) ND (0.17)	-	ND (0.38) ND (0.17)	-	ND (0.38) ND (0.17)	-	(0.00)	-	ND (0.38) ND (0.17)	-	ND (0.38) ND (0.17)	-	ND (0.38) ND (0.17)		ND (0.38) ND (0.17)	- ND (0		-+
o-Xylene Xylene (total)	1000	,	0.89 J	-	ND (0.17) ND (0.17)	-	ND (0.17) ND (0.17)	-	ND (0.17) ND (0.17)		ND (0.17) ND (0.17)	-	ND (0.17) ND (0.17)	1 -	ND (0.17) ND (0.17)	-	ND (0.17) ND (0.17)		ND (0.17) ND (0.17)			
Total VOCs	-		235.6		6		16.04		44.96		21.11		20.82		2.45				17.66			
GC/MS Volatile TIC																						
Total TIC, Volatile	-		57.7 J	-	0	-	0		0	-	0	-	0	- +	0	-	0	-	0	- 0	<del>-     - '</del>	-+
Total Alkanes	1 -		U	- 1	U	-	U		U	-	U	-	U	<u> </u>	U	-	U	i - I	U	(	11 -	-
Metals Analysis																						
Chromium	70		<10		29.5		127	03.5	5940	6270	131	189	909	590		<10	39.2	<10		<10 <1		10
Iron	300		-	13000		<100	-	2830		115	-	5060	-	<100		47300	-			<100 -	<1	.00
Sodium	5000	0	20300	-	128000	-	333000	-	4520000	-	168000	-	432000	- 1	23400	-	104000	-	102000	- 164	00	
General Chemistry																						
Solids, Total Dissolved	50000	10	180000	1 - 1	66700	1 -	1010000	1 - 1	13300000	1 - 1	1070000	-	1280000	1 - 1	317000	1 - 1	474000	1 - 1	454000	-   740	00	
Sulfate	25000	10	88400			-	528000	_	4060000		330000	<u>-</u>	426000	<u> </u>	71000	<u> </u>	216000		219000			
						_						_					_					

Supple Park	RND4_MW-14SS 2RND4_MW-14SS 2RND4_MW-5I 2RND4_MW-5I 2RND4_PZ-1S	2RND4_MW-14SS	2RND4_MW-14SD	ZRND4 MW-14SD		Sample ID
Maritim Organic Compounds (1905a)   Maritim Organic Compounds (1905b)   Maritim Organic Compounds (1					NJ CLASS IIA	
Variet Gyrans Compounds (10/Cs)  Sections (September 10/Cs)  Sections (September 10/Cs	11/12/2015 11/12/2015 11/13/2015 11/13/2015 11/13/2015	11/12/2015	11/12/2015	11/12/2015		Sample Type
Montable	GW GW-FILTERED GW GW-FILTERED GW	GW	GW-FILTERED	GW		Matrix
Excision	ug/L ug/L ug/L ug/L ug/L	ug/L	ug/L	ug/L	u <sub>6</sub> / L	
Description   1						
Demonstratements			-			
Second form			- +		1	
Supporture					1	
Deliconomic (MES)			-			
Carbon Statistics			-			
Carbon testachorde			-			
Chordenessee						
Chlosophane			-			
Chlorentates			-			
Comment   Comm			-		70	
1.00cm/ordentame			-		-	
Deteronchromenhane					0.02	
12-Determentementementer						
1.5 Descriptorpheneme   600   NO (0.23)   . NO (0.27)	ND (0.23) - ND (0.23) - ND (0.23)	ND (0.23)	-	ND (0.23)		1,2-Dibromoethane
1.6 Dischordementable   75			-			
Dichlorodifluoromethane						
1.1-Dichloroschane						
1.4 Dicharcethene						
Col. 2. Dichloroethene   70			-			
Insp. 12-Dichloropethene			-			
12-Dethorpropene						
Col.   3.0 inhoropropene   .   ND (0.21)   .   ND (0.27)   .   ND (0.23)   .   ND (0.24)   .   ND (0.25)   .						
1.4-Dioxane			-		-	
Ethylenerne			-		-	
Free   13			-			,
2-Hexanne			- +			
Isopropylenzene					-	
Methyl Acetate			-		700	
Methyl (Erb Buryl (Ether   70   ND (0.24)   -   ND (0.25)   -   ND (0.27)   -   ND (0.28)	ND (1.9) - ND (1.9) - ND (1.9)	ND (1.9)	-	ND (1.9)	7000	
4-Methyl-2-pentanone(Mil8K)   - NO (1.0)   - ND (1.0)			-		-	
Methylene chloride			-		70	
Styrene					- 2	
1.1,2,2-Fetrachloroethane			_			
Toluene			-			
1,2,3-Trichlorobenzene			-			
1,2,4-Trichlorobenzene			-		600	
1,1,1-richloroethane   30					9	
1,12 Trichloroethane   3			-			
Trichlorfluoromethane	ND (0.21) - ND (0.21) - ND (0.21)	ND (0.21)		ND (0.21)	3	1,1,2-Trichloroethane
Vinyl chloride         1         ND (0.15)         -         ND (0.18)         -         ND (0.17)         -						
m_p-Xylene						
0-Xylene						
Xylene (total)         1000         ND (0.17)         -         -         -         -         -         -         -         -         -         -         -         -         -					=	
GC/MS Volatile TIC  Total TIC, Volatile	ND (0.17) - ND (0.17) - ND (0.17)	ND (0.17)	-	ND (0.17)	1000	Xylene (total)
Total TIC, Volatile	1.51 2.36 4.74	1.51		1.43	-	Total VOCs
Total TIC, Volatile						GC/MS Volatile TIC
Total Alkanes         -         0         -         0         -         0           Metals Analysis           Chromium         70         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10 </td <td></td> <td>0 1</td> <td>1 1</td> <td>0 1 1</td> <td></td> <td></td>		0 1	1 1	0 1 1		
Netals Analysis   Chromium   70   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10   <10					-	
Chromium         70         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <100         <100         <100         <100         <10         <100         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10         <10 <t< td=""><td>·     -     0     -     0  </td><td>· ·</td><td>- 1</td><td>v I</td><td>-</td><td>TOTAL / MALICS</td></t<>	·     -     0     -     0	· ·	- 1	v I	-	TOTAL / MALICS
Iron     300     -     <100						Metals Analysis
Sodium 50000 42500 - 45300 - 14500 - 26800 - General Chemistry				<10		
General Chemistry				-		
	45300   -   14500   -   26800	45300	- 1	42500	50000	Soaium
						General Chemistry
Solids, Total Dissolved 500000 <b>212000</b> - <b>230000</b> - <b>175000</b> - <b>96700</b>	230000   -   175000   -   96700	230000	- 11	212000	500000	
Sulfate         250000         72900         -         78800         -         115000         -         83100	78800 - 115000 - 83100	78800			250000	Sulfate

# Evor Phillips Leasing Company (EPLC) Superfund Site Old Bridge, New Jersey Groundwater Elevations Table 3

			Inner		Round 2 /2015 <b>Ground</b>		Round 2 /2015 Ground		Round 2 /2015 Ground		Round 2 /2015 <b>Ground</b>
Well ID	Easting	Northing	Casing Elevation (ft amsl)	Depth to Water (ft toc)	Water Elevation (ft amsl)	Depth to Water (ft toc)	Water Elevation (ft amsl)	Depth to Water (ft toc)	Water Elevation (ft amsl)	Depth to Water (ft toc)	Water Elevation (ft amsl)
ISCO MW-1	540638.00	584218.00	46.23	NM		NM		NM		21.69	24.54
ISCO MW-2	540795.00	584320.00	48.92	21.19	27.73	21.98	26.94	22.21	26.71	22.46	26.46
ISCO MW-3	540912.00	584387.00	51.28	24.16	27.12	25.34	25.94	25.21	26.07	25.66	25.62
ISCO MW-4	540918.00	584326.00	44.67	17.60	27.07	18.83	25.84	18.65	26.02	19.14	25.53
ISCO MW-5	540698.00	584250.00	47.81	21.88	25.93	23.05	24.76	22.85	24.96	23.21	24.60
ISCO MW-6	540785.00	584303.00	48.78	NM		NM		NM		23.68	25.10
ISCO MW-7	540871.00	584335.00	46.3	18.92	27.38	20.00	26.30	19.90	26.40	20.30	26.00
ISCO MW-8	540879.00	584360.00	50.19	22.95	27.24	24.09	26.10	24.03	26.16	24.44	25.75
ISCO MW-9	541020.00	584422.00	48.79	21.51	27.28	22.72	26.07	22.26	26.53	22.98	25.81
IW1-BT-2	540925.16	584418.94	52.39	25.25	27.14	26.31	26.08	26.22	26.17	26.60	25.79
MW-14S	540781.83	584184.87	32.03	5.95	26.08	7.10	24.93	6.92	25.11	7.31	24.72
MW-10S	540619.21	584165.36	45.27	19.46	25.81	20.65	24.62	20.41	24.86	20.79	24.48
PZ-1S	540551.93	584158.57	44.24	NM		NM		NM		19.87	24.37
MW-5I	540691.57	584309.75	49.74	NM		NM		NM		24.94	24.80
IW1-DR-1	540926.52	584458.57	57.46	NM		NM		NM		27.67	29.79
MW-11I	540543.75	584212.88	47.92	NM		NM		NM		23.44	24.48





ADAPTED FROM: SOUTH AMBOY, NEW JERSEY USGS QUADRANGLE



EVOR PHILLIPS LEASING COMPANY SUPERFUND SITE OLD BRIDGE, NEW JERSEY

### SITE LOCATION





LEGEND

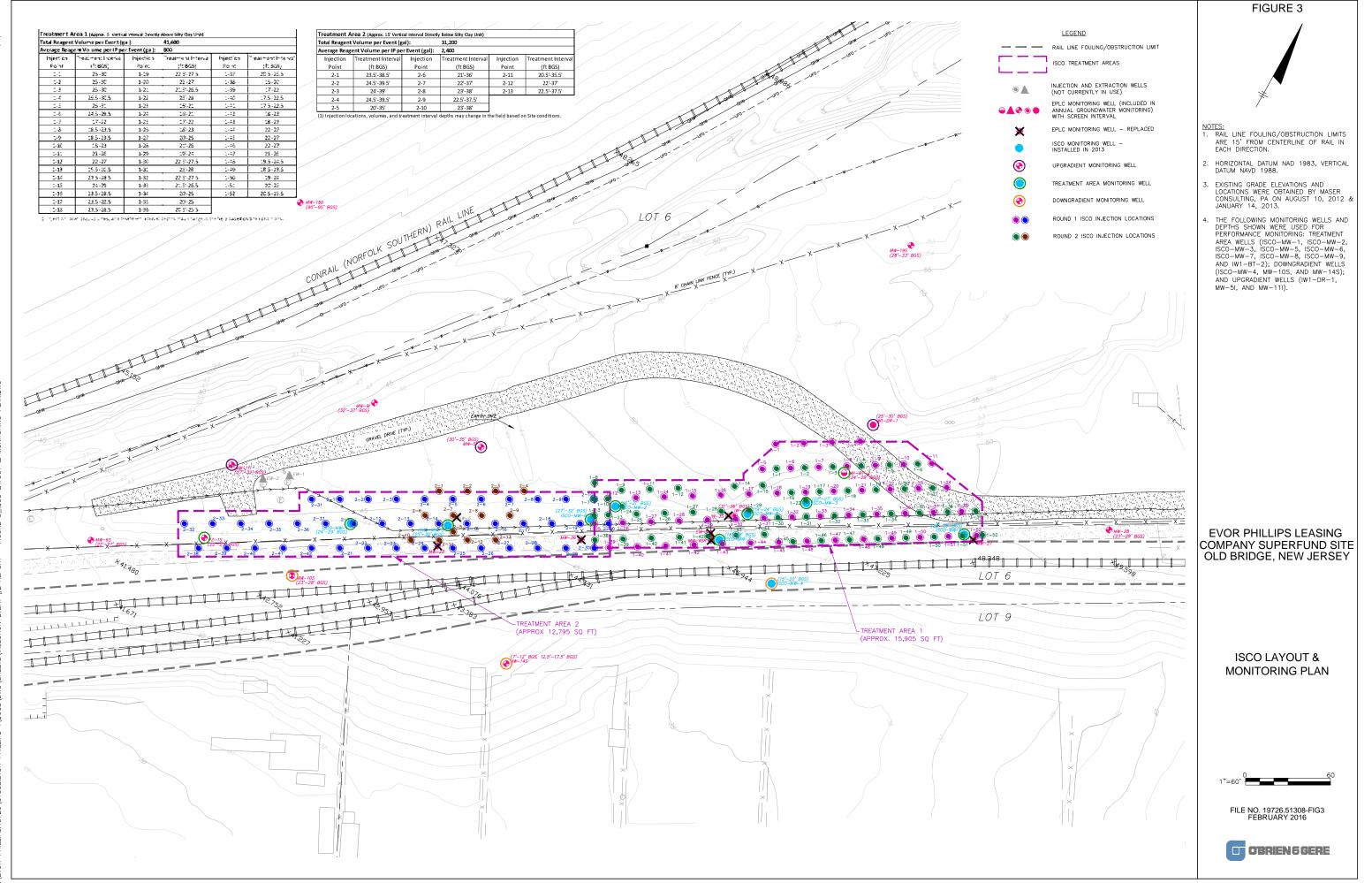


FIGURE 2

**EVOR PHILLIPS LEASING** COMPANY SUPERFUND SITE







### **Attachment 1**

Treatment Area 1
Injection Summary &
Process Monitoring
Results

### Treatment Area 1 Injection Data Summary (Event II) Evor Phillips Leasing Company Superfund Site Operable Unit 3 (OU3)



Date Completed	Injection Point ID	Screen Interval (ft bgs)	Persulfate Concentration (g/L)	Base to Persulfate Molar Ratio	BASP Injection Time (mins)	BASP Volume (gal)	BASP Flow Rate (gpm)	Sodium Persulfate (Ibs)	Sodium Hydroxide (lbs)	Maximum Well Head Pressure (psi)
4-Jun-15	1-38	15.0'-20.0'	50	~4.52:1	155	800.0	5.16	330	1016.5	0-10
4-Jun-15	1-39	17.0'-22.0'	50	~4.52:1	151	800.0	5.30	330	1016.5	0-10
4-Jun-15	1-40	17.5'-22.5'	50	~4.52:1	149	800.0	5.37	330	1016.5	0-12
4-Jun-15	1-41	17.5'-22.5'	50	~4.52:1	151	800.0	5.30	330	1016.5	0-12
4-Jun-15	1-42	18.0'-23.0'	50	~4.52:1	161	800.0	4.97	330	1016.5	0-2
4-Jun-15	1-44	22.0'-27.0'	50	~4.52:1	149	800.0	5.37	330	1016.5	0-20
5-Jun-15	1-43	18.0'-23.0'	50	~4.52:1	161	800.0	4.97	330	1016.5	0-20
5-Jun-15	1-45	22.0'-27.0'	50	~4.52:1	121	800.0	6.61	330	1016.5	0-2
5-Jun-15	1-46	22.0'-27.0'	50	~4.52:1	161	800.0	4.97	330	1016.5	0-2
5-Jun-15	1-47	21.0'-26.0'	50	~4.52:1	142	800.0	5.63	330	1016.5	0-10
5-Jun-15	1-48	19.5'-24.5'	50	~4.52:1	166	800.0	4.82	330	1016.5	0-2
5-Jun-15	1-49	18.5'-23.5'	50	~4.52:1	137	800.0	5.84	330	1016.5	0-2
5-Jun-15	1-50	19.0'-24.0'	50	~4.52:1	147	800.0	5.44	330	1016.5	0-20
5-Jun-15	1-51	20.0'-25.0'	50	~4.52:1	137	800.0	5.84	330	1016.5	0-20
5-Jun-15	1-52	20.5'-25.5'	50	~4.52:1	162	800.0	4.94	330	1016.5	0-2
8-Jun-15	1-13	15.5'-20.5'	50	~4.52:1	133	800.0	6.02	330	1016.5	0-5
8-Jun-15	1-25	17.0'-22.0'	50	~4.52:1	135	800.0	5.93	330	1016.5	0-5
8-Jun-15	1-27	20.0'-25.0'	50	~4.52:1	144	800.0	5.56	330	1016.5	0-15
8-Jun-15	1-29	19.0'-24.0'	50	~4.52:1	144	800.0	5.56	330	1016.5	0-5
8-Jun-15	1-31	23.0'-28.0'	50	~4.52:1	137	800.0	5.84	330	1016.5	0-10
8-Jun-15	1-33	21.5'-26.5'	50	~4.52:1	131	800.0	6.11	330	1016.5	0-2
8-Jun-15	1-34	20.0'-25.0'	50	~4.52:1	180	800.0	4.44	330	1016.5	0-8
8-Jun-15	1-35	20.0'-25.0'	50	~4.52:1	131	800.0	6.11	330	1016.5	0-2
8-Jun-15	1-36	20.5'-25.5'	50	~4.52:1	148	800.0	5.41	330	1016.5	0-2
8-Jun-15	1-37	20.5'-25.5'	50	~4.52:1	144	800.0	5.56	330	1016.5	0-6
9-Jun-15	1-16	23.5'-28.5'	50	~4.52:1	110	800.0	7.27	330	1016.5	0-2
9-Jun-15	1-17	23.5'-28.5'	50	~4.52:1	115	800.0	6.96	330	1016.5	0-14
9-Jun-15	1-18	23.5'-28.5'	50	~4.52:1	119	800.0	6.72	330	1016.5	0-2
9-Jun-15	1-19	22.5'-27.5'	50	~4.52:1	111	800.0	7.21	330	1016.5	0-6
9-Jun-15	1-20	22.0'-27.0'	50 50	~4.52:1	106	800.0	7.55	330	1016.5	0-10
9-Jun-15	1-21	21.5'-26.5'		~4.52:1	114	800.0	7.02	330 330	1016.5	0-14 0-2
9-Jun-15 9-Jun-15	1-22 1-23	23.0'-28.0'	50 50	~4.52:1	104 114	800.0	7.69	330	1016.5 1016.5	0-2
	1-23	16.0'-21.0'	50	~4.52:1	120	800.0	7.02			
9-Jun-15 9-Jun-15	1-24	16.0'-21.0' 18.0'-23.0'	50	~4.52:1 ~4.52:1	117	800.0 800.0	6.67 6.84	330 330	1016.5 1016.5	0-18 0-10
9-Jun-15 9-Jun-15	1-28	21.0'-26.0'	50	~4.52:1	116	800.0	6.90	330	1016.5	0-10
9-Jun-15 9-Jun-15	1-28	20.5'-25.5'	50	~4.52:1	117	800.0	6.84	330	1016.5	0-10
9-Jun-15 10-Jun-15	1-30	25.0'-30.0'	50	~4.52:1	117	800.0	6.96	330	1016.5	0-2
10-Jun-15 10-Jun-15	1-02	17.0'-22.0'	50	~4.52:1	115	800.0	6.96	330	1016.5	0-40
10-Jun-15 10-Jun-15	1-07	18.5'-23.5'	50	~4.52:1	137	800.0	5.84	330	1016.5	0-10
10-Jun-15	1-08	18.5'-23.5'	50	~4.52:1	149	800.0	5.37	330	1016.5	0-3
10-Jun-15	1-10	18.0'-23.0'	50	~4.52:1	115	800.0	6.96	330	1016.5	0-8
10-Jun-15	1-10	21.0'-26.0'	50	~4.52:1	121	800.0	6.61	330	1016.5	0-10
10-Jun-15	1-11	22.0'-27.0'	50	~4.52:1	137	800.0	5.84	330	1016.5	0-10
10-Jun-15	1-12	23.5'-28.5'	50	~4.52:1	137	800.0	5.84	330	1016.5	0-2
10-Jun-15	1-14	24.0'-29.0'	50	~4.52:1	108	800.0	7.41	330	1016.5	0-2
10-Jun-15	1-32	22.5'-27.5'	50	~4.52:1	119	800.0	6.72	330	1016.5	0-2
11-Jun-15	1-01	25.0'-30.0'	50	~4.52:1	114	800.0	7.02	330	1016.5	0-2
11-Jun-15	1-01	25.0'-30.0'	50	~4.52:1	145	800.0	5.52	330	1016.5	0-2
11-Jun-15	1-03	25.5'-30.5'	50	~4.52:1	112	800.0	7.14	330	1016.5	0-2
11-Jun-15	1-04	26.0'-31.0'	50	~4.52:1	134	800.0	5.97	330	1016.5	0-2
11-Jun-15	1-05	24.5'-29.5'	50	~4.52:1	120	800.0	6.67	330	1016.5	0-2
11 7011-13	- 00	27.3 .23.3	30	7.32.1	120	41600.0	6.13	17160.0	52857.1	J-2

Old Bridge, New Jersey ISOTEC #801870

#### Notes:

**BASP** = Base activated sodium persulfate solution.

 $\mathbf{g/L}$  = Grams per liter.

Mins = Minutes.

Gal = Gallons.

**GPM** = Gallons per minute.

**lbs** = Pounds.

**PSI** = Pounds per square inch.

FT BGS = Feet below ground surface.

## Evor Phillips Superfund Site Event II Groundwater Field Monitoring Data - Treatment Area 1 Wells Old Bridge, New Jersey ISOTEC Project #801870



Point	Date		Time	Cond	ORP	рН	TDS	Temp.	DO	Persulfate	DTW
				uS	mV		mg/l	C.	mg/l	mg/l	ft bgs
MW-2	6/1/2015	6/1/15 11:00	11:00 AM	3511	75	6.69	2696	15.7	10.67	7.0	21.35
MW-2	6/2/2015	6/2/15 9:30	9:30 AM	4891	15	6.40	3918	12.0	10.32	1.0	21.36
MW-2	6/3/2015	6/3/15 9:00	9:00 AM	4131	65	6.26	3252	12.7	8.78	2.4	21.29
MW-2	6/4/2015	6/4/15 9:00	9:00 AM	3682	153	6.45	2856	14.3	8.05	4.2	21.29
MW-2	6/5/2015	6/5/15 10:30	10:30 AM	3264	228	6.35	2489	17.6	4.81	7.0	20.97
MW-2 MW-2	6/8/2015 6/9/2015	6/8/15 9:30 6/9/15 10:45	9:30 AM 10:45 AM	2914 12000	106 159	6.85 13.01	2198 12000	18.6 22.8	3.58 1.60	1.4 1.4	20.58 19.20
MW-2	6/10/2015	6/10/15 10:30	10:43 AM	12000	156	12.80	12000	22.3	7.11	5250.0	19.12
MW-2	6/11/2015	6/11/15 11:45	11:45 AM	12000	230	12.95	12000	24.7	3.20	5250.0	19.80
MW-2	6/15/2015	6/15/15 17:45	5:45 PM	98620	218	13.09	160400	17.1	1.87	7000.0	20.57
	2, 22, 2020									1	
MW-3	6/1/2015	6/1/15 11:00	11:00 AM	1335	86	6.63	963	16.0	12.45	0.7	24.31
MW-3	6/2/2015	6/2/15 9:30	9:30 AM	1371	34	6.47	1000	12.0	8.10	0.7	24.17
MW-3	6/3/2015	6/3/15 9:00	9:00 AM	1259	91	6.42	913	13.0	4.77	0.7	24.03
MW-3	6/4/2015	6/4/15 9:00	9:00 AM	1276	172	6.50	923	14.2	4.97	2.8	23.93
MW-3	6/5/2015	6/5/15 10:30	10:30 AM	1315	228	6.66	943	17.8	3.40	4.2	23.66
MW-3	6/8/2015	6/8/15 9:30	9:30 AM	2915	189	7.08	2199	17.4	2.14	70.0	22.95
MW-3	6/9/2015	6/9/15 10:45	10:45 AM	3740	170	8.39	2854	18.4	3.08	245.0	23.34
MW-3	6/10/2015	6/10/15 13:05	1:05 PM	1109	53	6.36	776	21.5	1.26	0.7	23.41
MW-3	6/11/2015	6/11/15 11:45	11:45 AM	12000 9036	267 280	12.96 13.49	12000 137200	25.3	2.10	5250.0 7000.0	23.15
MW-3	6/15/2015	6/15/15 15:15	3:15 PM	9036	280	13.49	137200	23.1	1.09	7000.0	23.81
MW-4	6/1/2015	6/1/15 11:00	11:00 AM	117	150	6.68	76	15.8	10.93	0.0	17.84
MW-4	6/2/2015	6/2/15 9:30	9:30 AM	118	164	5.92	78	11.3	8.88	0.7	17.63
MW-4	6/3/2015	6/3/15 9:00	9:00 AM	110	155	6.19	73	12.7	7.01	0.0	17.44
MW-4	6/4/2015	6/4/15 9:00	9:00 AM	114	229	5.90	75	13.7	6.40	0.0	17.31
MW-4	6/5/2015	6/5/15 10:30	10:30 AM	113	300	5.48	73	17.8	5.02	0.0	17.10
MW-4	6/8/2015	6/8/15 9:30	9:30 AM	615	392	4.54	425	16.7	6.30	0.0	17.00
MW-4	6/9/2015	6/9/15 10:45	10:45 AM	114	319	6.20	73	21.1	4.70	0.0	16.85
MW-4	6/11/2015	6/11/15 11:45	11:45 AM	112	425	5.99	72	22.3	6.16	0.0	16.92
2024 7	C /4 /2045	C/4/4F 44:00	11:00 414	704	126	6.60	554	16.0	0.50	70.0	10.11
MW-7 MW-7	6/1/2015 6/2/2015	6/1/15 11:00 6/2/15 9:30	11:00 AM 9:30 AM	781 1588	136 76	6.68 6.64	551 1162	16.0 12.0	8.59 5.96	70.0 250.0	19.14 19.29
MW-7	6/3/2015	6/3/15 9:00	9:00 AM	1988	166	6.46	1471	13.3	4.94	350.0	19.29
MW-7	6/4/2015	6/4/15 9:00	9:00 AM	1883	246	6.34	1386	14.3	4.90	350.0	19.05
MW-7	6/5/2015	6/5/15 10:30	10:30 AM	1959	257	6.52	1440	18.4	3.86	350.0	17.80
MW-7	6/8/2015	6/8/15 9:30	9:30 AM	3064	182	9.67	2316	17.4	5.92	350.0	18.34
MW-7	6/9/2015	6/9/15 10:45	10:45 AM	9522	59	12.08	8013	22.2	2.73	1750.0	17.33
MW-7	6/10/2015	6/10/15 10:30	10:30 AM	7956	53	12.09	6552	23.4	3.29	1750.0	18.12
MW-7	6/11/2015	6/11/15 11:45	11:45 AM	6396	117	11.70	5141	24.1	4.96	3500.0	18.14
MW-7	6/15/2015	6/15/15 16:00	4:00 PM	2825	204	12.39	29150	16.1	4.75	7000.0	18.46
	6/1/0015			1=00				45.0			
MW-8	6/1/2015	6/1/15 11:00	11:00 AM	1596	99	8.47	1160	16.3	6.02	350.0	23.15
MW-8	6/2/2015 6/3/2015	6/2/15 9:30	9:30 AM	1890 1802	8 143	8.09 7.26	1395	12.3 13.7	4.90 4.14	350.0 350.0	23.12
MW-8	6/4/2015	6/3/15 9:00 6/4/15 9:00	9:00 AM 9:00 AM	1989	206	7.63	1324 1469	14.4	4.14	250.0	23.92 22.82
MW-8	6/5/2015	6/5/15 10:30	10:30 AM	2246	140	9.69	1666	18.8	3.43	350.0	22.27
MW-8	6/8/2015	6/8/15 9:30	9:30 AM	2004	161	9.32	1475	18.1	3.27	245.0	21.55
MW-8	6/9/2015	6/9/15 10:45	10:45 AM	2285	114	9.18	1684	24.3	2.92	280.0	21.94
MW-8	6/10/2015	6/10/15 11:15	11:15 AM	2798	117	8.79	2114	22.9	3.29	505.0	22.09
MW-8	6/11/2015	6/11/15 11:45	11:45 AM	1417	239	7.76	1001	25.2	3.22	280.0	22.01
MW-8	6/15/2015	6/15/15 18:00	6:00 PM	3902	103	9.23	3100	13.5	2.78	700.0	22.54
MW-8	6/17/2015	6/17/15 9:00	9:00 AM	6301	170	12.05	5189	17.5	4.30	7000.0	22.60
	C /4 /20: =	Cla la F · · · · · · ·	144.00	251	461	6	2:0	46.1			24.05
MW-9	6/1/2015	6/1/15 11:00	11:00 AM	351	164	6.50	240	16.1	5.45	0.0	21.85
MW-9	6/2/2015	6/2/15 9:30	9:30 AM	380	109	6.45	263	12.2	4.50	0.0	21.63
MW-9 MW-9	6/3/2015 6/4/2015	6/3/15 9:00 6/4/15 9:00	9:00 AM 9:00 AM	360 324	195 233	6.04 6.22	247 258	13.7 14.2	3.64 3.72	0.0	21.51 21.29
MW-9	6/5/2015	6/5/15 10:30	10:30 AM	362	248	6.15	246	19.8	2.78	0.0	20.88
MW-9	6/8/2015	6/8/15 9:30	9:30 AM	366	339	5.45	249	18.6	6.07	0.7	20.85
MW-9	6/9/2015	6/9/15 10:45	10:45 AM	365	279	5.92	244	25.2	2.59	0.0	20.90
MW-9	6/10/2015	6/10/15 13:40	1:40 PM	396	350	5.63	269	21.4	3.18	0.0	20.94
				_			_	_			

## Evor Phillips Superfund Site Event II Groundwater Field Monitoring Data - Treatment Area 1 Wells Old Bridge, New Jersey ISOTEC Project #801870



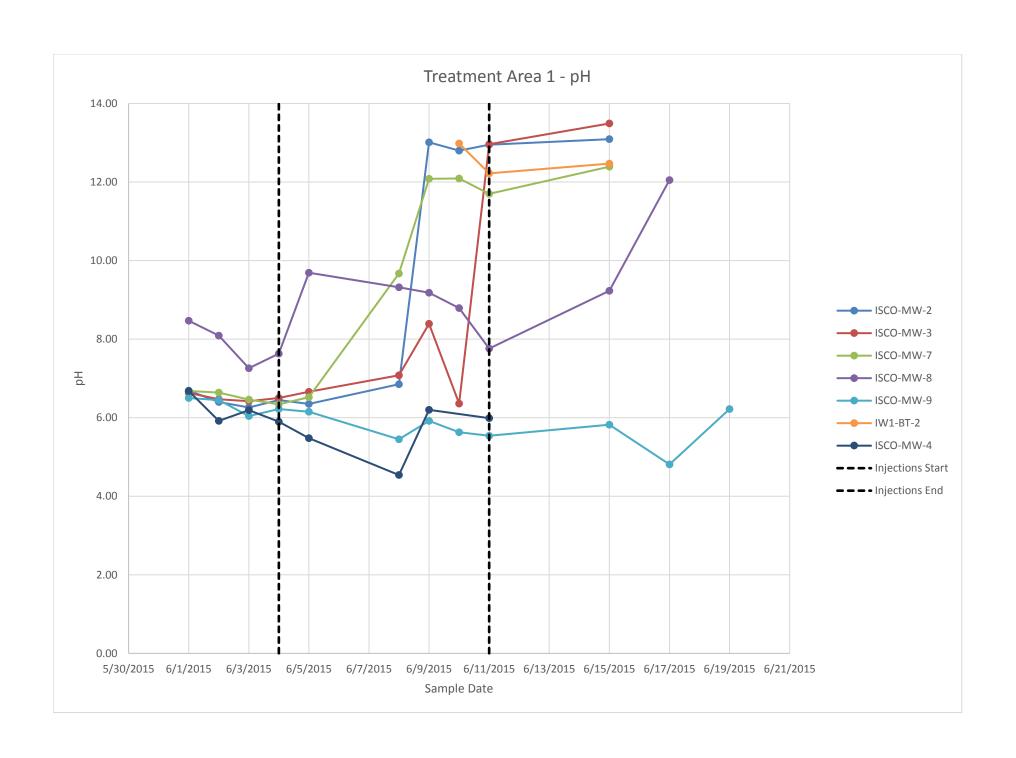
Point	Date		Time	Cond	ORP	рН	TDS	Temp.	DO	Persulfate	DTW
				uS	mV		mg/l	C.	mg/l	mg/l	ft bgs
MW-9	6/11/2015	6/11/15 11:45	11:45 AM	371	362	5.54	248	25.1	2.25	0.0	20.95
MW-9	6/15/2015	6/15/15 16:30	4:30 PM	455	260	5.82	312800	16.4	3.48	7.0	21.14
MW-9	6/17/2015	6/17/15 9:00	9:00 AM	753	181	4.81	533	16.1	2.58	7-14	21.17
MW-9	6/19/2015	6/19/15 0:00		1337	287	6.22	921	14.8	2.03	70	21.12
IW1-BT-2	6/10/2015	6/10/15 12:10	12:10 PM	12000	283	12.98	12000	24.8	2.02	5250.0	24.48
IW1-BT-2	6/11/2015	6/11/15 11:45	11:45 AM	12000	62	12.22	12000	26.6	1.51	5250.0	24.04
IW1-BT-2	6/15/2015	6/15/15 14:10	2:10 PM	1433	128	12.47	12890	20.3	2.05	7000.0	24.79

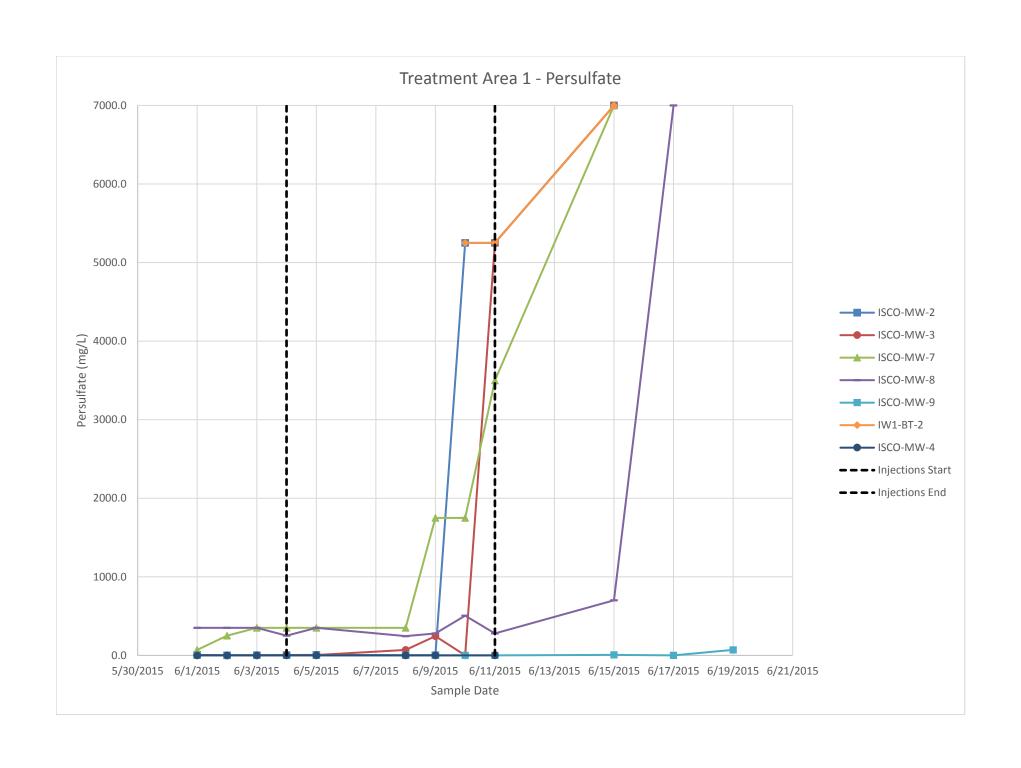
### Notes:

the type of ty

Conductivity and TDS values represented as 12,000 indicate value greater than that number (above the measurement capability of the testing instrument).

DO = Dissolved oxygen
TDS = Total dissolved solids
ORP = Redox Potential
Cond = Conductivity
Persulfate concentrations represented as 5,250 mg/l
indicate concentration greater than that number as this was
the lowest dilution factor utilized when determining
persulfate concentration.





### **Attachment 2**

Treatment Area 2
Injection Summary &
Process Monitoring
Results

# Treatment Area 2 Injection Data Summary (Event II) Evor Phillips Leasing Company Superfund Site Operable Unit 3 (OU3) Old Bridge, New Jersey ISOTEC #801870



Date Completed	Injection Point ID	Screen Interval (ft bgs)	Persulfate Concentration (g/L)	Base to Persulfate Molar Ratio	BASP Injection Time (mins)	BASP Volume (gal)	BASP Flow Rate (gpm)	Sodium Persulfate (lbs)	Sodium Hydroxide (lbs)	Maximum Well Head Pressure (psi)
1-Jun-15	2-01 D	33.5'-38.5'	50	~4.52:1	161	800.0	4.97	330	1016.5	0-25
1-Jun-15	2-01 l	28.5'-33.5'	50	~4.52:1	132	800.0	6.06	330	1016.5	0-7
1-Jun-15	2-02 D	34.5'-39.5'			Multiple	refusals and t	hen clogged s	creen		-
1-Jun-15	2-05 D	30.0'-35.0'	50	~4.52:1	136	800.0	5.88	330	1016.5	0-3
1-Jun-15	2-10 D	33.0'-38.0'	50	~4.52:1	150	800.0	5.33	330	1016.5	0-2
1-Jun-15	2-10 l	28.0'-33.0'	50	~4.52:1	142	800.0	5.63	330	1016.5	0-5
1-Jun-15	2-11 D	30.5'-35.5'	50	~4.52:1	150	800.0	5.33	330	1016.5	0-5
1-Jun-15	2-11 l	30.5'-35.5'	50	~4.52:1	100	800.0	8.00	330	1016.5	0-2
1-Jun-15	2-12 D	32.0'-37.0'	50	~4.52:1	161	800.0	4.97	330	1016.5	0-10
1-Jun-15	2-13 D	32.5'-37.5'	50	~4.52:1	151	800.0	5.30	330	1016.5	0-5
2-Jun-15	2-01 S	23.5'-28.5'	50	~4.52:1	126	800.0	6.35	330	1016.5	0-15
2-Jun-15	2-02 D	34.5'-39.5'	50	~4.52:1	138	800.0	5.80	330	1016.5	0-30
2-Jun-15	2-05 I	25.0'-30.0'	50	~4.52:1	164	800.0	4.88	330	1016.5	0-15
2-Jun-15	2-05 S	30.0'-35.0'	50	~4.52:1	139	800.0	5.76	330	1016.5	0-30
2-Jun-15	2-10 S	23.0'-28.0'	50	~4.52:1	162	800.0	4.94	330	1016.5	0-8
2-Jun-15	2-11 S	20.5'-25.5'	50	~4.52:1	164	800.0	4.88	330	1016.5	0-11
2-Jun-15	2-12	27.0'-32.0'	50	~4.52:1	156	800.0	5.13	330	1016.5	0-30
2-Jun-15	2-12 S	22.0'-27.0'	50	~4.52:1	126	800.0	6.35	330	1016.5	0-20
2-Jun-15	2-13	27.5'-32.5'	50	~4.52:1	160	800.0	5.00	330	1016.5	0-30
2-Jun-15	2-13 S	22.5'-27.5'	50	~4.52:1	127	800.0	6.30	330	1016.5	0-10
3-Jun-15	2-02 I	29.5'-34.5'	50	~4.52:1	137	800.0	5.84	330	1016.5	0-20
3-Jun-15	2-02 S	24.5'-29.5'	50	~4.52:1	123	800.0	6.50	330	1016.5	0-15
3-Jun-15	2-03 D	34.0'-39.0'	50	~4.52:1	118	800.0	6.78	330	1016.5	0-5
3-Jun-15	2-06 D	31.0'-36.0'	50	~4.52:1	137	800.0	5.84	330	1016.5	0-2
3-Jun-15	2-06	26.0'-31.0'	50	~4.52:1	115	800.0	6.96	330	1016.5	0-2
3-Jun-15	2-06 S	21.0'-26.0'	50	~4.52:1	120	800.0	6.67	330	1016.5	0-40
3-Jun-15	2-07 D	32.0'-37.0'	50	~4.52:1	146	800.0	5.48	330	1016.5	0-2
3-Jun-15	2-07 I	27.0'-32.0'	50	~4.52:1	121	800.0	6.61	330	1016.5	0-2
3-Jun-15	2-07 S	22.0'-27.0'	50	~4.52:1	135	800.0	5.93	330	1016.5	0-30
3-Jun-15	2-08 D	33.0'-38.0'	50	~4.52:1	127	800.0	6.30	330	1016.5	0-2
3-Jun-15	2-08	28.0'-33.0'	50	~4.52:1	116	800.0	6.90	330	1016.5	0-2
3-Jun-15	2-08 S	23.0'-28.0'	50	~4.52:1	112	800.0	7.14	330	1016.5	0-12
3-Jun-15	2-09 D	32.5'-37.5'	50	~4.52:1	127	800.0	6.30	330	1016.5	0-20
3-Jun-15	2-09	27.5'-32.5'	50	~4.52:1	115	800.0	6.96	330	1016.5	0-10
3-Jun-15	2-09 S	22.5'-27.5'	50	~4.52:1	118	800.0	6.78	330	1016.5	0-40
4-Jun-15	2-03 I	29.0'-34.0'	50	~4.52:1	155	800.0	5.16	330	1016.5	0-2
4-Jun-15	2-03 S	24.0'-29.0'	50	~4.52:1	155	800.0	5.16	330	1016.5	0-20
4-Jun-15	2-04 D	34.5'-39.5'	50	~4.52:1	161	800.0	4.97	330	1016.5	0-2
4-Jun-15	2-041	29.5'-34.5'	50	~4.52:1	157	800.0	5.10	330	1016.5	0-2
5-Jun-15	2-04 S	24.5'-29.5'	50	~4.52:1	161	800.0	4.97	330	1016.5	0-10
Totals	_					31200.0	5.88	12870.0	39642.9	

### Notes:

**BASP** = Base activated sodium persulfate solution.

g/L = Grams per liter.Mins = Minutes.Gal = Gallons.

**GPM** = Gallons per minute.

**lbs** = Pounds.

**PSI** = Pounds per square inch.

**FT BGS** = Feet below ground surface.

## Evor Phillips Superfund Site Event II Groundwater Field Monitoring Data - Treatment Area 2 Wells Old Bridge, New Jersey ISOTEC Project #801870



Point	Date		Time	Cond	ORP	pН	TDS	Temp.	DO	Persulfate	DTW
				uS	mV		mg/l	C.	mg/l	mg/l	ft bgs
MW-5	6/1/2015	6/1/15 11:00	11:00 AM	241	156	6.12	161	16.2	7.77	0.0	21.58
MW-5	6/2/2015	6/2/15 9:30	9:30 AM	264	101	5.83	178	12.6	5.50	0.0	21.38
MW-5	6/3/2015	6/3/15 9:45	9:45 AM	849	110	9.27	600	15.9	2.85	250.0	21.29
MW-5	6/3/2015	6/3/15 15:00	3:00 PM	303	110	5.73	203	18.7	5.85	2.4	21.31
MW-5	6/4/2015	6/4/15 10:00	10:00 AM	968	213	7.18	687	17.8	7.02	525.0	21.27
MW-5	6/4/2015	6/4/15 14:00	2:00 PM	2522	49	11.24	1845	18.1	6.48	1000.0	21.27
MW-5	6/5/2015	6/5/15 10:30	10:30 AM	1306	40	12.35	1145	18.7	3.45	1750.0	21.17
MW-5	6/5/2015	6/5/15 13:15	1:15 PM	1237	60	12.41	1077	17.0	3.48	1750.0	21.17
MW-5	6/5/2015	6/5/15 15:00	3:00 PM	11020	22	12.34	9464	21.0	20.00	1750.0	21.17
MW-5	6/8/2015	6/8/15 9:30	9:30 AM	10960	29	12.46	9441	18.3	2.66	1750.0	21.19
MW-5	6/9/2015	6/9/15 10:45	10:45 AM	5064	67	11.85	3996	22.6	9.31	1750.0	21.30
MW-5	6/10/2015	6/10/15 10:30	10:30 AM	5159	64	11.99	4071	23.2	1.98	1750.0	21.35
MW-5	6/11/2015	6/11/15 11:45	11:45 AM	8243	63	12.15	6802	24.2	2.46	3500.0	21.38
MW-5	6/15/2015	6/15/15 17:00	5:00 PM	3023	-21	11.82	2368	15.3	1.50	7000.0	23.81
	•		•			•					

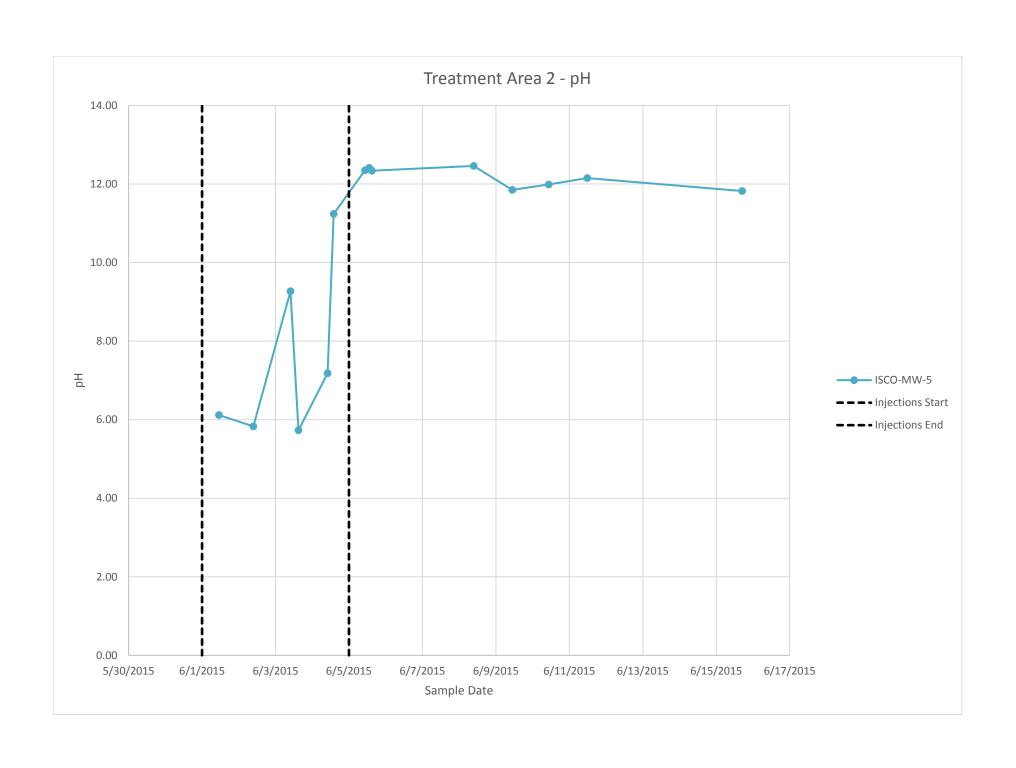
### Notes:

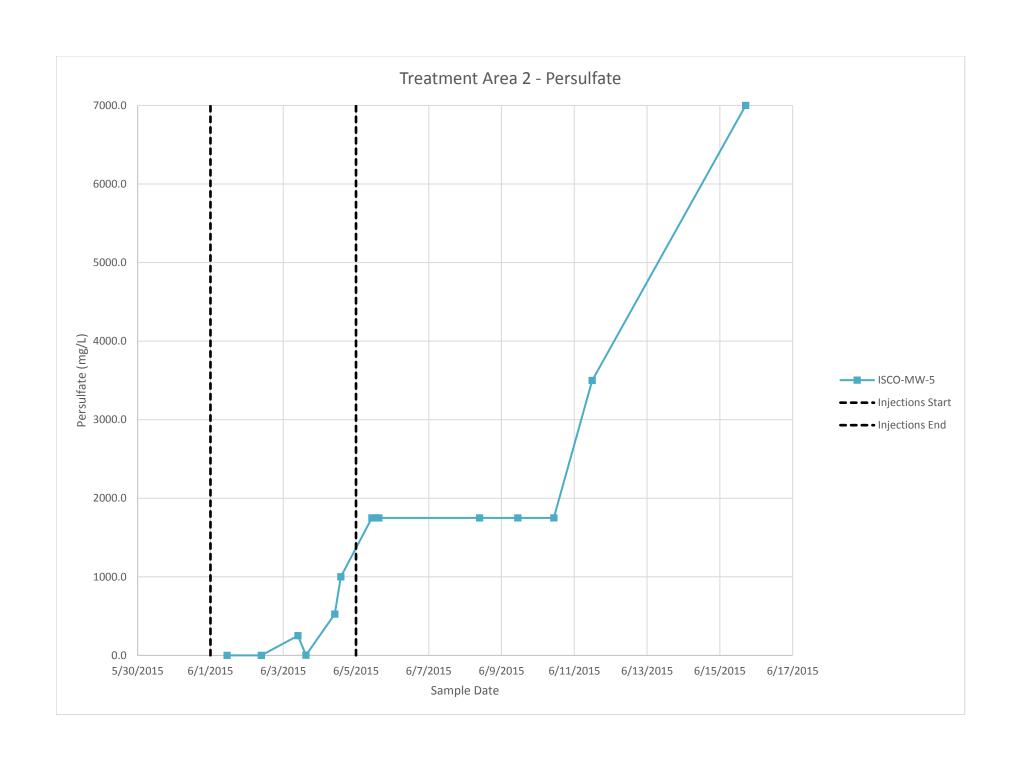
ft bgs = feet below ground surface
uS = micro siemens
mV = milli volts
mg/l = milligrams per liter
C = degree Celsius
NA = not analyzed
DTW = Depth to water
Conductivity and TDS values represented as 12,000 in

Conductivity and TDS values represented as 12,000 indicate value greater than that number (above the measurement capability of the testing instrument).

DO = Dissolved oxygen
TDS = Total dissolved solids
ORP = Redox Potential
Cond = Conductivity

Persulfate concentrations represented as 5,250 mg/l indicate concentration greater than that number as this was the lowest dilution factor utilized when determining persulfate concentration.





Attachment 3
Groundwater Low-Flow
Sampling Logs

### O'BRIEN 5 GERE **Low Flow Ground Water Sampling Log** Date: 7/22/2015 Personnel: K. Biegert Weather: Sunny, 80° Pump/Controller ID#: ISCO-MW-2 Site Name: **Evor Phillips** Monsoon Well #: Sampling Method: 51308 Site Location: Old Bridge, NJ Low-Flow Project #: Monitoring Equip. Used (include ID#): Well information: Well Diameter Multipliers Measurements taken from Depth of Well\*: 23.55 ft. 2 in. = 0.163 gal/ft Top of Well Casing 21.19 ft. Depth to Water\*: 4 in. = 0.653 gal/ftTop of Protective Casing Length of Water Column: 2.31 ft. 6 in. = 1.469 gal/ft 8 in. = 2.611 gal/ft Pump Intake Depth: ft. (Other, Specify) 2 in. Well Diameter: Start Purge Time: 1355 indicate units Depth To Specific **Elapsed Temperature** ORP Dissolved **Turbidity** Flow Rate Water Conductivity Time (Celsius) (mV) Oxygen (mg/l) (NTU) (ml/min) (mS/cm) (ft bmp) pH (SU) 1356 21.75 15.42 14.00 36.1 59 0.00 999 200 14.68 0.00 999 200 1401 22.40 14.00 37.6 143 1405 Run Dry 1458 23.55 16.56 14.00 33.3 211 0.84 999 200 Post Sample Reading Stabilization $\Delta \leq 0.3$ ± 3% $\pm 0.1$ ± 3% ± 10 mV ± 10% ± 10% $100 \le X \le 500$ End Purge Time: 1515 Water sample: Time collected: Total volume of purged water removed: 1500 1.5 gal Physical appearance at start Physical appearance at sampling Color Yellow, Cloudy Yellow, Cloudy Color Odor None Odor None Sheen/Free Product None Sheen/Free Product None **Analytical Parameters:** Container Size Container Type # Collected Field Filtered Preservative Lab 40 ml Vial Ν HCL Accutest 500 ml Ρ N/YNone Accutest Р 500 ml Ν HNO3 Accutest

Well ran dry

Notes:

0.367 gal = well volume, purged 1 gallon pH = 14

Persulfate 1,000 mg/L at 100x dilution



	DITIEN	OGERE		LOW F	iow Groui	iu water S	amping	Log
Date:	7/23/2015	Persoi	nnel:	K. Biegerl	t / K. Twombly	Weather:	Sunny,	70°
Site Name:	Evor Phillips	 Pump/	Controller ID	 D#:		Well #:	ISCO-M\	 N-3
Site Location:	Old Bridge, NJ	 Sampl	ing Method:	Lo	w-Flow	Project #:	51308	
	uip. Used (includ	_						
Well informat		C 1D#).	Wall Diama	eter Multipliers		* Measuremer	to taken from	
Depth of Well*		29.79 ft.	2 in. = 0.1	•		X	Top of Well Ca	noina
Depth to Wate		29.79 ft.	4 in. = 0.1	•		^	Top of Protect	
Length of Wate		ft.	6 in. = 1.469 gal/ft				1 00 01 1 101001	ive easing
Pump Intake D		ft.	8 in. = 2.6	-			(Other, Specify	y)
Well Diameter	· —	2 in.		Ü			1, , ,	,,
Start Purge Tir	me:	0800	•	indicate units				
Elapsed Time	Depth To Water (ft bmp)	Temperature (Celsius)	pH (SU)	Specific Conductivity (mS/cm)	ORP (mV)	Dissolved Oxygen (mg/l)	Turbidity (NTU)	Flow Rate (ml/min)
0803	24.53	16.76	14.00	42.1	354	9.11	999	350
0808	24.51	14.50	14.00	26.5	332	7.53	999	350
0813	24.53	13.87	14.00	25.6	333	6.40	999	350
0818	24.51	13.90	14.00	27.9	340	5.37	999	350
0823	24.51	13.79	14.00	26.8	338	4.46	999	350
0828	24.49	13.79	14.00	27.1	339	3.70	999	350
0833	24.52	13.67	14.00	26.6	338	3.05	999	350
0838	24.39	13.98	14.00	31.6	346	1.53	999	350
0843	24.40	14.11	14.00	30.0	343	0.00	999	350
0848	24.36	13.89	14.00	27.3	340	0.00	999	350
0853	24.52	13.33	14.00	25.4	333	0.00	999	350
0858	24.55	12.80	14.00	26.8	337	0.00	600	350
0903	24.55	12.79	14.00	27.5	340	0.00	999	350
0908	24.55	12.84	14.00	27.8	341	0.00	999	350
0913	24.54	12.85	14.00	27.3	341	0.00	999	350
0918	24.53	12.93	14.00	27.3	341	0.00	999	350
Stabilization	Δ ≤ 0.3'	± 3%	± 0.1	± 3%	± 10 mV	± 10%	± 10%	100 ≤ X ≤ 500
End Purge Tim	ne: <u></u>	930						
Water sample				Tatal calcus			00.05.1	
Time collected	: 0925 earance at start	_		Total volume of	. •	emovea: earance at sam	26.25 L	
Filysical appe		own/Cloudy			Filysical app	Color	Brown/Cloudy	
		one	=			Odor	None	-
Sheen/Free Pr	oduct No	one	-		Sheen/F	ree Product	None	<u>.</u>
Analytical Par	ameters:							
Container S	Size Co	ontainer Type	# Collect	ed Field	d Filtered	Preservat	ive	Lab
40 ml		Vial			N	HCL		Accutest
500 ml		P		N / Y None			Accutest	
500 ml		Р			N	HNO3		Accutest
							<del>-  </del>	
			<u> </u>					
Notes:	Persulfate 70 m	ng/L at 200x dilution	n			<u> </u>		
	4 VOC vials							

9	BRIE	N & GERE		Low FI	ow Grou	nd Water S	amplin	ıg Log
Date:	7/22/201	15 Perso	onnel:	K. <sup>-</sup>	Гeitsma	Weather:	Sur	nny, 80
Site Name:	Evor Phill		o/Controller ID		onsoon	- Well #:		D-MW-4
		<del>·                                      </del>	oling Method:		w-Flow	_		1308
Site Location:			ning wethou.	LO	W-FIOW	Project #:	<u> </u>	1306
Monitoring Equ		clude ID#):	1					
Well informati				eter Multipliers		* Measuremen	ì	
Depth of Well*:		19.67 ft.	2 in. = 0.1	•		Х	Top of We	
Depth to Water		17.60 ft.	4 in. = 0.6	-			Top of Pro	tective Casing
Length of Wate Pump Intake D		ft.	6 in. = 1.4 8 in. = 2.6	•			(Other, Sp	necify)
Well Diameter:	•	it.	0 111. = 2.0	ir gai/it			(Other, Sp	ecity)
Start Purge Tin		0850						
Elapsed Time	Depth T Water (ft bmp	Temperature	pH (SU)	Specific Conductivity (mS/cm)	ORP (mV)	Dissolved Oxygen (mg/l)	Turbidi (NTU)	-
0850	17.95	10.93	4.23	0.093	304	10.42	151	-
0855	-	10.87	3.83	0.097	340	5.43	103	350
0900	-	11.07	3.73	0.099	354	5.29	43	300
0905	-	11.22	3.73	0.098	357	4.89	31.8	300
0910	-	11.36	3.71	0.098	362	4.93	20.8	300
0915	-	11.36	3.69	0.099	364	4.99	9.1	300
0920	-	11.40	3.66	0.099	370	4.71	1.2	300
0925	-	11.56	3.66	0.099	369	4.82	0.0	300
Stabilization	Δ ≤ 0.3	± 3%	± 0.1	± 3%	± 10 mV	± 10%	± 10%	100 ≤ X ≤ 500
			20.1	2070	2101111	2 1070	2.10%	100171100
End Purge Tim		0925						
Water sample		205		<b>-</b>			44 75 1	
Time collected: Physical appe		925 tart		Total volume of	. •	removea: pearance at samp	11.75 L	
Рпуѕісаї арре	Color	Cloudy/Yellowish			riiysicai app	-	Clear/Yello	nwish
	Odor	None	_			Odor	None	<u>owisi</u> 1
Sheen/Free Pr		None	<b>-</b> -		Sheen/		None	
Analytical Par	ameters:							
Container S	Size	Container Type	# Collect	ed Field	l Filtered	Preservat	ive	Lab
40 ml		Vial			N	HCL		Accutest
500 ml		Р			N / Y	None		Accutest

Ν

HNO3

500 ml

Notes:

Ρ

Water level below top of pump

Accutest



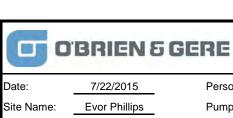
K. Biegert 7/22/2015 Personnel: Weather: Sunny, 80° Date: ISCO-MW-5 Site Name: Evor Phillips Pump/Controller ID#: Monsoon Well #: Site Location: Old Bridge, NJ Sampling Method: Low-Flow Project #: 51308 Monitoring Equip. Used (include ID#): Well information: Well Diameter Multipliers Measurements taken from Depth of Well\*: 32.60 ft. 2 in. = 0.163 gal/ftΧ Top of Well Casing 21.88 ft. Depth to Water\*: 4 in. = 0.653 gal/ftTop of Protective Casing Length of Water Column: 6 in. = 1.469 gal/ft ft. Pump Intake Depth: ft. 8 in. = 2.611 gal/ft (Other, Specify) 2 in. Well Diameter: Start Purge Time: 1207 indicate units Depth To Specific **Elapsed Temperature** ORP Dissolved **Turbidity** Flow Rate Water Conductivity Time (Celsius) (mV) Oxygen (mg/l) (NTU) (ml/min) (ft bmp) pH (SU) (mS/cm) 1208 21.92 14.07 7.50 0.404 -43 0.00 999 400 400 1213 21.92 12.27 6.24 0.278 40 0.00 999 1218 21.92 11.93 6.01 0.301 49 0.00 999 400 1223 21.92 11.79 5.96 0.310 53 0.00 1000 400 1228 21.92 11.76 5.89 0.308 59 0.00 684 400 1233 21.92 11.57 5.92 0.305 60 0.00 333 400 1238 21.92 11.59 5.86 0.300 67 0.00 246 400 1243 21.92 11.56 5.72 0.297 73 0.00 169 400 1248 21.92 11.51 5.75 0.295 75 0.00 119 400 1253 21.92 11.47 5.71 0.293 81 0.00 80 400 1258 21.92 11.37 5.73 0.293 83 0.00 65.3 400 1303 21.92 11.45 5.71 0.289 89 0.00 35.4 400 1308 21.92 11.39 5.71 0.282 93 0.00 18.5 400 14.8 1313 21.92 11.37 5.77 0.284 93 0.00 400 5.74 400 1318 21.92 11.39 0.283 98 0.00 12 Stabilization  $\Delta \leq 0.3$ ± 3%  $\pm 0.1$ ± 3% ± 10 mV ± 10% ± 10%  $100 \le X \le 500$ End Purge Time: 1325 Water sample: Time collected: 1320 Total volume of purged water removed: 30 L Physical appearance at start Physical appearance at sampling Color Clear Brown, Cloudy Color Odor None Odor None Sheen/Free Product None Sheen/Free Product None Analytical Parameters: Container Size # Collected Field Filtered Preservative Container Type Lab 40 ml Vial Ν HCL Accutest 500 ml Ρ N/YNone Accutest Ρ 500 ml Ν HNO3 Accutest Notes: Sample ID: 2RNDL-ISCO-MW-5-072215 **DUP** collected Persulfate 0-0.7 mg/L (no dilution)



7/22/2015 Personnel: K. Teitsma / K. Twombly Weather: 80° Sunny Date: Site Name: Evor Phillips Pump/Controller ID#: 023367 / R260581 Well #: ISCO-MW-7 Site Location: Old Bridge, NJ Sampling Method: Low-Flow Project #: 51308 Monitoring Equip. Used (include ID#): Well information: Well Diameter Multipliers Measurements taken from Depth of Well\*: 22.60 ft. 2 in. = 0.163 gal/ftΧ Top of Well Casing 18.92 ft. Depth to Water\*: 4 in. = 0.653 gal/ftTop of Protective Casing Length of Water Column: 6 in. = 1.469 gal/ft ft. Pump Intake Depth: ft. 8 in. = 2.611 gal/ft (Other, Specify) 2 in. Well Diameter: Start Purge Time: 1143 indicate units Depth To **Specific Elapsed Temperature** ORP Dissolved **Turbidity** Flow Rate Water Conductivity Time (Celsius) (mV) Oxygen (mg/l) (NTU) (ml/min) (ft bmp) pH (SU) (mS/cm) 1148 19.54 11.96 13.14 4.56 -3 5.16 0.0 400 1155 19.69 12.57 13.15 4.28 -8 3.37 0.0 350 1200 19.67 11.97 13.40 4.96 -14 2.55 0.0 350 5.13 1205 19.67 12.35 13.42 -15 2.09 0.0 350 1210 19.27 13.31 13.13 4.98 -14 1.57 0.0 350 1215 19.72 11.12 13.50 4.74 -12 0.92 0.0 350 1220 19.56 11.70 13.59 5.03 -14 0.65 0.0 300 1225 19.59 11.52 13.50 5.31 -10 0.55 0.0 300 1230 19.52 11.69 13.49 5.15 -8 0.27 0.0 300 1235 19.54 11.48 13.58 5.60 -8 0.00 300 1240 19.59 11.62 13.64 6.02 -5 0.00 1000 300 -2 1245 19.60 11.78 13.58 5.91 0.00 0.0 300 1250 19.61 11.32 13.48 4.83 2 0.00 0.0 300 1255 11.18 13.63 5.65 1 0.00 0.0 300 19.68 9 300 1300 19.65 11.80 13.48 5.60 0.00 300 1305 13.46 8 0.00 0.0 300 19.59 11.86 5.11 1310 19.51 12.01 13.44 4.95 8 0.00 0.0 300 1315 5 0.0 300 19.60 11.01 13.60 5.53 0.00 1320 19.68 12.31 13.51 6.03 11 0.00 182 300 Stabilization  $\Delta \leq 0.3$ ± 3%  $\pm 0.1$ ± 3% ± 10 mV ± 10% ± 10%  $100 \le X \le 500$ End Purge Time: 1410 Water sample: Time collected: 1400 Total volume of purged water removed: 39.25 L Physical appearance at start Physical appearance at sampling Color Brownish/Cloudy Brownish/Cloudy Color Odor None Odor None Sheen/Free Product None Sheen/Free Product None Analytical Parameters: Container Size Field Filtered Preservative Container Type # Collected Lab 40 ml Vial Ν HCL Accutest 500 ml Ρ N/YNone Accutest Ρ 500 ml Ν HNO3 Accutest Notes: Turbidity out of range of meter

								_		
60	BRII	ENE	GERE		Low F	low Grou	nd Water S	ampli	ng L	.og
Date:	7/22/2	2015	Persor	nnel:	K. '	Teitsma	Weather:	80	o Suni	ny
Site Name:	Evor Pl		Pump/	Controller ID		onsoon	Well #:		O-MV	
Site Location:			•	ing Method:		w-Flow	Project #:		51308	
				ing wethou.		W-1 10W	1 Toject #.		31300	
Monitoring Equ		(IIICIUUE	ID#)	Wall Diama	tau Multipliana	 	* Measurements taken from			
Depth of Well*			22 60 ft		eter Multipliers					sing
Depth to Wate			22.60 ft. 18.92 ft.	2 in. = 0.1 4 in. = 0.6	-			Top of W		sing ve Casing
Length of Wate		· —	10.92 It.	6 in. = 1.4	-			TOP OF I	iolecti	ve casing
Pump Intake D		·· —	ft.	8 in. = 2.6	-			(Other, S	Specify	·)
Well Diameter			2 in.		Ü			,	. ,	,
Start Purge Tir	me:				indicate units					
Elapsed Time	Depth Wat (ft br	er	Temperature (Celsius)	pH (SU)	Specific Conductivity (mS/cm)	ORP (mV)	Dissolved Oxygen (mg/l)	Turbic (NTL	-	Flow Rate (ml/min)
1325	19.5	55	11.41	13.44	4.86	14	0.00	0.0		300
1330	19.5	51	11.80	13.44	4.93	14	0.00	0.0		300
1335	19.6	61	11.07	13.52	4.91	12	0.00	0.0		300
1340	19.6	69	11.30	13.60	5.90	12	0.00	0.0		300
1345	19.6	67	11.36	13.54	5.72	17	0.00	0.0		300
1350	19.6	69	11.40	13.57	5.68	18	0.00	0.0		300
Ctabilization	Δ ≤ 0	) 3'	. 20/	. 0.1	. 20/	. 10 m\/	. 109/	. 10	0/	100 < V < 500
Stabilization	ΔΣ	).5	± 3%	± 0.1	± 3%	± 10 mV	± 10%	± 10°	%	100 ≤ X ≤ 500
End Purge Tin	ne:	14	10							
Water sample	<b>)</b> :									
Time collected		1400			Total volume of	. •		39.25 L		
Physical appe						Physical app	earance at samp	_		
	Color	Yello		-			•	Clear		
Sheen/Free Pi	Odor roduct	Non Non		-		Sheen/F	•	None None		
		_		-		3,1001/1	.551154401	. 10110		
Analytical Par Container S			tainer Tyne	# Collect	ad Eigl	d Filtered	Preservati	V0		Lab
40 ml	SIZE	Con	tainer Type Vial	# Collect	eu Field	N Flitered	HCL	ve		Accutest
500 ml			P			N/Y	None			Accutest
500 ml			P			N	HNO3			Accutest

### Turbidity out of range of meter



Date:	7/22/2015	Persor	nnel:	K. *	Teitsma	Weather:	80° Sui	nny
Site Name:	Evor Phillips	_ Pump/	/Controller ID	- Ο#: <u>Μ</u> α	onsoon	Well #:	ISCO-M	IW-8
Site Location:	Old Bridge, NJ	Sampl	ling Method:	Lo	w-Flow	Project #:	5130	)8
Monitoring Equ	uip. Used (include	e ID#):		·		-		
Well informati		·	Well Diame	eter Multipliers		* Measuremen	nts taken from	
Depth of Well*	:	26.52 ft.	2 in. = 0.1	·		Х	Top of Well C	Casing
Depth to Wate		22.95 ft.	4 in. = 0.6	-			Top of Protec	•
Length of Wate		ft.	6 in. = 1.4	-				-
Pump Intake D	Depth:	ft.	8 in. = 2.6	ວ11 gal/ft			(Other, Specif	fy)
Well Diameter:	<u> </u>	2 in.			<u> </u>		<u>'</u>	
Start Purge Tir		1415		indicate units				
Elapsed	Depth To	Temperature		Specific	ORP	Dissolved	Turbidity	Flow Rate
Time	Water	(Celsius)	-11 (CII)	Conductivity	(mV)	Oxygen (mg/l)	_	(ml/min)
1400	(ft bmp)	14.60	pH (SU)	(mS/cm)	102	1 0.22	000	250
1420	23.18	14.60	14.00	43.5	102	0.23	998	350
1425	23.23	13.67	14.00	39.0	117	0.00	461	350
1430	23.39	12.39	14.00	26.4	104	0.00	372	350
1435	23.19	15.30	14.00	34.9	115	0.00	396	350
1440	23.29	13.74	14.00	26.1	120	0.00	339	350
1445	23.39	12.43	14.00	24.8	116	0.00	341	350
1450	23.45	12.24	14.00	25.6	121	0.00	298	350
1455	23.25	13.31	14.00	34.6	136	0.00	253	300
1500	23.39	13.28	14.00	24.6	130	0.00	262	300
1505	23.39	13.25	14.00	24.3	137	0.00	205	300
1510	23.41	13.13	14.00	24.7	135	0.00	208	300
1515	23.43	13.06 14.00		25.1	138	0.00	191	300
	<u> </u>							
		<u> </u>						
		T				1		
Stabilization	Δ ≤ 0.3'	± 3%	± 0.1	± 3%	± 10 mV	± 10%	± 10%	100 ≤ X ≤ 500
End Purge Tim	ne· 1	515						
_		<u> </u>						
Water sample Time collected				Total volume of	nurged water	removed:	19.75 L	
	earance at start	-		Total volumo c.	. •	pearance at samp		
,		ange/Yellow Cloud	vb		·, •	Color	Yellow/Clear	
	Odor No	_	2				None	_
Sheen/Free Pr	roduct No	ne	<u>-</u>		Sheen/f	Free Product	None	<del>-</del> -
Analytical Par	ameters:							
Container S	Size Co	ntainer Type	# Collect	ted Field	d Filtered	Preservat	ive	Lab
40 ml		Vial			N	HCL		Accutest
500 ml		P	<u> </u>	!	N/Y	None		Accutest
500 ml		Р	<u> </u>		N	HNO3		Accutest
	<del></del>		<del> </del>	<del></del>		+	-+	
Notes:			<u> </u>					
Notes.								<del></del>
i								
1			•				•	



Date:	7/22/2015	Persor	nnel:	K. 7	Twombly	Weather:	70° Sur	nny
Site Name:	Evor Phillips	Pump/	/Controller ID	D#: 02336	/ R260581	Well #:	ISCO-M\	W-9
Site Location:	Old Bridge, NJ	Sampl	ling Method:	Lo	w-Flow	Project #:	51308	8
Monitoring Equ	uip. Used (include	e ID#):		<del></del> -		-		
Well informati	•	·	Well Diame	eter Multipliers		* Measuremen	its taken from	
Depth of Well*		24.85 ft.	2 in. = 0.1	·		Х	Top of Well Ca	asing
Depth to Wate		21.51 ft.	4 in. = 0.6	•			Top of Protect	•
Length of Wate		ft.	6 in. = 1.4	•			]	
Pump Intake D	· —	ft.	8 in. = 2.6	i11 gal/ft			(Other, Specify	у)
Well Diameter:	<u> </u>	<u>2</u> in.						
Start Purge Tir	-	1005		indicate units				_
Elapsed	Depth To	Temperature		Specific	ORP	Dissolved	Turbidity	Flow Rate
Time	Water (ft bmp)	(Celsius)	pH (SU)	Conductivity (mS/cm)	(mV)	Oxygen (mg/l)	_	(ml/min)
1005	21.85	12.52	5.74	0.528	283	7.09	746	400
1013	21.79	12.18	5.63	0.453	287	6.27	385	400
1018	21.90	11.49	5.68	0.439	287	5.46	202	400
1023	21.81	1188	5.85	0.552	282	4.60	237	400
1028	21.90	11.23	5.95	0.600	279	3.39	268	400
1033	21.95	11.08	6.05	0.664	276	2.48	337	400
1038	22.03	11.08	6.03	0.595	275	1.85	198	400
1043	21.78	12.12	6.06	0.591	272	1.53	202	400
1048	21.77	12.31	5.93	0.513	275	1.29	118	400
1053	21.81	12.25	5.90	0.467	276	1.06	160	400
1058	21.88	11.57	6.01	0.585	271	0.73	127	400
1103	22.01	10.91	6.07	0.600	270	0.39	96.3	400
1108	21.80	12.17	6.06	0.582	268	0.13	99.3	400
1113	21.73	12.13	6.06	0.562	267	0.09	95.2	400
	<u> </u>	<u> </u>	<u></u>	<u>Γ</u>	<u> </u>	<u>T</u>	<u> </u>	<u> </u>
Stabilization	Δ ≤ 0.3'	± 3%	± 0.1	± 3%	± 10 mV	± 10%	± 10%	100 ≤ X ≤ 500
End Purge Tim	ne: 1'	113						
Water sample								
Time collected				Total volume of	purged water	removed:	28 L	
Physical appe	earance at start	•			Physical app	pearance at samp		
		llow, Cloudy	_				Yellow Tint	_
	Odor Nor		-		01 //	•	None	-
Sheen/Free Pr		ne			Sneen/i	Free Product	None	-
Analytical Par		. <u> </u>			· <del>_</del>			
Container S	Size Cor	ntainer Type Vial	# Collect	led Field	d Filtered N	Preservati HCL	ive	Lab
40 ml 500 ml		P	<del> </del>	<del>-   ,</del>	N/Y	None		Accutest Accutest
500 ml		P	+	+	N	HNO3		Accutest
			<u> </u>	<u> </u>		†		
			<u></u>			<u> </u>		
Notes:	Persulfate 200 m	ng/L (no dilution)						



Date:	7/23/2015	Persor	nnel:	K. Twomb	bly / K. Biegert	Weather:	Sunny 7	75°
Site Name:	Evor Phillips	Pump/	/Controller ID	)#: <u>M</u> c	onsoon	Well #:	IW1-BT	Γ-2
Site Location:	Old Bridge, NJ	Sampl	ling Method:	Lo	w-Flow	Project #:	51308	8
Monitoring Equ	uip. Used (include	ID#):						
Well informat	tion:		Well Diame	eter Multipliers		* Measuremen	its taken from	
Depth of Well*	*:	36.59 ft.	2 in. = 0.1	63 gal/ft		Х	Top of Well Ca	asing
Depth to Wate	er*:	25.25 ft.	4 in. = 0.653 gal/ft		Top of Protective Casing			
Length of Wate		ft.	6 in. = 1.469 gal/ft					
Pump Intake D	Depth:	ft.	8 in. = 2.6	11 gal/ft			(Other, Specify	y)
Well Diameter	: <u> </u>	<u>2</u> in.			<u></u>			
Start Purge Tir		0955		indicate units				
Elapsed	Depth To	Temperature	ŀ	Specific	ORP	Dissolved	Turbidity	Flow Rate
Time	Water (ft bmp)	(Celsius)	pH (SU)	Conductivity (mS/cm)	(mV)	Oxygen (mg/l)	_	(ml/min)
0957	22.37	13.74	14.00	37.0	336	0.00	999	350
1002	25.45	12.02	14.00	14.8	276	0.00	999	350
1002	25.42	11.88	14.00	12.7	229	0.00	999	350
1012	25.42	11.79	14.00	11.1	184	0.00	999	350
1012	25.41	11.79	14.00	10.5	170	0.00	999	350
1017	25.41	11.76	14.00	9.90	160	0.00	999	350
1022	25.41	11.76	14.00	9.90	150	0.00	999	350
1027	25.42	11.65	14.00	9.36 8.91	141	0.00	999	350
		11.84			137	0.00	999	
1037	25.40		14.00	8.74	t -			350
1042	25.41	11.86	14.00	8.58	132	0.00	999	350
1047	25.41	11.88	14.00	8.28	125	0.00	999	350
1052	25.42	11.74	14.00	8.14	122	0.00	999	350
1057	25.41	11.66	14.00	7.91	118	0.00	999	350
1102	25.41	11.68	14.00	7.77	114	0.00	999	350
1107	25.41	11.74	14.00	7.69	111	0.00	999	350
1112	25.41	11.84	14.00	7.60	109	0.00	999	350
1117	25.41	11.97	13.95	7.57	110	0.00	999	350
1122	25.41	11.97	13.93	7.54	112	0.00	999	350
Stabilization	Δ ≤ 0.3'	± 3%	± 0.1	± 3%	± 10 mV	± 10%	± 10%	100 ≤ X ≤ 500
								200 = 1111 = 1
End Purge Tim	ne: 11	40						
Water sample								
Time collected				Total volume of			31.5 L	<del></del>
Physical appe	earance at start  Color Brov	wn/Cloudy			Pnysicai appe	earance at samp Color	pling Brown/Cloudy	,
	Odor Non		-			Odor	None Brown/Cloudy	-
Sheen/Free Pr			-		Sheen/F	Free Product	None	-
Analytical Par			<del>-</del>					-
Container S		ntainer Type	# Collect	ted Field	d Filtered	Preservati	ive	Lab
40 ml		Vial			N	HCL		Accutest
500 ml	<u> </u>	Р	†		N/Y	None		Accutest
500 ml		Р			N	HNO3		Accutest
						<b></b>		
	112/1405					<u> </u>		
Notes:	MS/MSD coll	ected						
								<del></del>

### O'BRIEN 5 GERE **Low Flow Ground Water Sampling Log** Date: 7/22/2015 Personnel: K. Biegert Weather: Clear, 70 MW-10S Site Name: Evor Phillips Pump/Controller ID#: Monsoon Well #: Sampling Method: 51308 Site Location: Old Bridge, NJ Low-Flow Project #: Monitoring Equip. Used (include ID#): Well information: Well Diameter Multipliers Measurements taken from Depth of Well\*: 31.30 ft. 2 in. = 0.163 gal/ft Top of Well Casing 19.46 ft. Depth to Water\*: 4 in. = 0.653 gal/ftTop of Protective Casing Length of Water Column: 6 in. = 1.469 gal/ft ft. 8 in. = 2.611 gal/ft Pump Intake Depth: ft. (Other, Specify) 2 in. Well Diameter: Start Purge Time: 1007 indicate units Depth To Specific **Elapsed Temperature** ORP Dissolved **Turbidity** Flow Rate Water Conductivity Time (Celsius) (mV) Oxygen (mg/l) (NTU) (ml/min) (ft bmp) pH (SU) (mS/cm) 400 1037 19.50 12.45 5.95 0.200 253 0.00 770 0.00 0.229 400 1042 19.50 12.17 5.97 271 667 1047 19.50 13.40 5.97 0.243 281 0.00 210 400 1052 19.50 13.85 6.00 0.252 281 0.00 144 400 1057 19.50 13.04 5.96 0.241 288 0.00 99.7 400 1102 19.50 13.31 5.94 0.233 290 0.00 94.4 400 1107 19.50 13.09 6.00 0.229 289 0.00 91.7 400 1112 19.50 13.12 5.98 0.232 291 0.00 48.7 400 1117 19.50 13.07 6.00 0.236 292 0.00 47.6 400 1122 19.50 13.15 6.00 0.232 292 0.00 48.2 400 Stabilization $\Delta \leq 0.3$ ± 3% $\pm 0.1$ ± 3% ± 10 mV ± 10% ± 10% $100 \le X \le 500$ End Purge Time: 1135 Water sample: Time collected: Total volume of purged water removed: 1125 20 L Physical appearance at start Physical appearance at sampling Color Yellow Tint Yellow Color Odor None Odor None Sheen/Free Product None Sheen/Free Product None **Analytical Parameters:** Container Size Container Type # Collected Field Filtered Preservative Lab 40 ml Vial Ν HCL Accutest 500 ml Ρ N/YNone Accutest Р 500 ml Ν HNO3 Accutest

### Horiba in sun

Sample: 2RND1-MW-10S-072215

### O'BRIEN 5 GERE Low Flow Ground Water Sampling Log Date: 7/22/2015 Personnel: K. Biegert / K. Teitsma Weather: Clear, 70° Pump/Controller ID#: Well #: MW-14SS Site Name: Evor Phillips Monsoon Sampling Method: Site Location: Old Bridge, NJ Low-Flow Project #: 51308 Monitoring Equip. Used (include ID#): Well information: Well Diameter Multipliers Measurements taken from Depth of Well\*: 17.45 ft. 2 in. = 0.163 gal/ft Χ Top of Well Casing 5.95 ft. Depth to Water\*: 4 in. = 0.653 gal/ftTop of Protective Casing Length of Water Column: 6 in. = 1.469 gal/ft ft. 8 in. = 2.611 gal/ft (Other, Specify) Pump Intake Depth: ft. 2 in. Well Diameter: Start Purge Time: 0840 indicate units Depth To Specific **Elapsed Temperature** ORP Dissolved **Turbidity** Flow Rate Water Conductivity Time (Celsius) (mV) Oxygen (mg/l) (NTU) (ml/min) (mS/cm) (ft bmp) pH (SU) 0841 5.99 12.19 6.60 1.35 245 2.08 49.2 400 1.32 0.83 400 0846 5.99 12.16 6.60 238 50.1 0851 5.99 12.10 6.60 1.32 235 0.78 51.5 400 0856 5.99 12.27 6.58 1.31 231 0.49 44.4 400 0901 5.99 12.19 6.57 1.31 228 0.32 42.9 400 0906 5.99 12.07 6.56 1.30 227 0.32 37.9 400 0911 5.99 12.07 6.55 1.30 226 0.30 39.4 400 Stabilization $\Delta \leq 0.3$ ± 3% $\pm 0.1$ ± 3% ± 10 mV ± 10% ± 10% $100 \le X \le 500$ End Purge Time: 0925 Water sample: Time collected: Total volume of purged water removed: 0915 14 L Physical appearance at start Physical appearance at sampling Color Clear Clear Color Odor None Odor None Sheen/Free Product None Sheen/Free Product None **Analytical Parameters:**

Container Size	Container Type	# Collected	Field Filtered	Preservative	Lab
40 ml	Vial		N	HCL	Accutest
500 ml	Р		N/Y	None	Accutest
500 ml	Р		N	HNO3	Accutest

Notes: Pump set to 10' bgs

Sample: 2RND1-MW-14SS-072215

### O'BRIEN 5 GERE **Low Flow Ground Water Sampling Log** Date: 7/22/2015 Personnel: K. Biegert Weather: Sunny, 70° Pump/Controller ID#: Well #: MW-14SD Site Name: Evor Phillips Monsoon Sampling Method: 51308 Site Location: Old Bridge, NJ Low-Flow Project #: Monitoring Equip. Used (include ID#): Well information: Well Diameter Multipliers Measurements taken from Depth of Well\*: 17.45 ft. 2 in. = 0.163 gal/ft Χ Top of Well Casing 5.95 ft. Depth to Water\*: 4 in. = 0.653 gal/ftTop of Protective Casing Length of Water Column: 6 in. = 1.469 gal/ft ft. 8 in. = 2.611 gal/ft Pump Intake Depth: ft. (Other, Specify) 2 in. Well Diameter: Start Purge Time: 0918 indicate units Depth To Specific **Elapsed** Temperature ORP Dissolved **Turbidity** Flow Rate Water Conductivity Time (Celsius) (mV) Oxygen (mg/l) (NTU) (ml/min) (mS/cm) (ft bmp) pH (SU) 0920 5.96 11.23 6.70 1.16 212 0.00 58.2 400 11.05 0.00 49.3 400 0925 5.98 6.65 1.16 208 0928 5.98 11.10 6.65 1.15 206 0.00 43.8 400 0933 5.98 11.31 6.64 1.14 206 0.00 41.0 400 0938 5.98 11.46 6.64 1.13 207 0.00 37.4 400 Stabilization $\Delta \leq 0.3$ ± 3% $\pm 0.1$ ± 3% ± 10 mV ± 10% ± 10% $100 \le X \le 500$ End Purge Time: 0945 Water sample: Time collected: Total volume of purged water removed: 0940 10 L Physical appearance at start Physical appearance at sampling Color Clear Clear Color Odor None Odor None Sheen/Free Product None Sheen/Free Product None **Analytical Parameters:** Container Size Container Type # Collected Field Filtered Preservative Lab 40 ml HCL Vial Ν Accutest 500 ml Ρ N/YNone Accutest Р 500 ml Ν HNO3 Accutest

Pump set to 15' hgs 2RND1-MW-14SD-072215

### O'BRIEN 5 GERE **Low Flow Ground Water Sampling Log** Date: 9/16/2015 Personnel: K. Biegert Weather: Clear, 70 Pump/Controller ID#: ISCO-MW-2 Site Name: Evor Phillips Bailer Well #: Sampling Method: 51308 Site Location: Old Bridge, NJ Low-Flow Project #: Monitoring Equip. Used (include ID#): 14257 U-52 Well information: Well Diameter Multipliers Measurements taken from Depth of Well\*: 23.55 ft. 2 in. = 0.163 gal/ft Top of Well Casing 22.00 ft. Depth to Water\*: 4 in. = 0.653 gal/ftTop of Protective Casing Length of Water Column: 1.55 ft. 6 in. = 1.469 gal/ft 8 in. = 2.611 gal/ft (Other, Specify) Pump Intake Depth: ft. 2 in. Well Diameter: Start Purge Time: 0812 indicate units Depth To Specific **Elapsed Temperature** ORP Dissolved **Turbidity** Flow Rate Water Conductivity Time (Celsius) (mV) Oxygen (mg/l) (NTU) (ml/min) (mS/cm) (ft bmp) pH (SU) Well Volume 22.98 10.46 24.7 110 6.75 999 2 Well Volume 23.02 999 10.48 24.0 128 1.43 3 Well Volume 23.09 10.48 24.7 158 1.48 999 Stabilization $\Delta \leq 0.3$ ± 3% $\pm 0.1$ ± 3% ± 10 mV ± 10% ± 10% $100 \le X \le 500$ End Purge Time: 1125 Water sample: Time collected: Total volume of purged water removed: 1120 0.75 gal Physical appearance at start Physical appearance at sampling Color Yellow, Cloudy Yellow, Cloudy Color Odor None Odor None Sheen/Free Product None Sheen/Free Product None **Analytical Parameters:** Container Size Container Type # Collected Field Filtered Preservative Lab 40 ml Vial Ν HCL Accutest 500 ml Ρ 2 N/YNone Accutest Р 500 ml 1 Ν HNO3 Accutest

### i:\50\projects\GE\33961\n&d\field forms\microlog.xls

Well Volume = 0.25 gal

Unable to pump, bail 3 well volumes



	BITIEIN	OGERE		Low Flow Ground Water Sampling Log					
Date:	9/16/2015	Persor	nnel:	D. M	ongiardo	Weather:	Sunny 7	′0's	
Site Name:	Evor Phillips	Pump/	Controller ID	D#: Mc	onsoon	Well #:	ISCO-M	W-3	
Site Location:	Old Bridge, NJ	_ Sampl	ing Method:	Lo	w-Flow	Project #:	51308	<del></del>	
	ıip. Used (includ	<del>-</del>	•			- ′			
Well informati				eter Multipliers		* Measuremen	nts taken from		
Depth of Well*		29.79 ft.		in. = 0.163 gal/ft		* Measurements taken from  X Top of Well Casing			
Depth to Wate		25.38 ft.	4 in. = 0.6	ŭ			Top of Protect	-	
Length of Wate		ft.	6 in. = 1.469 gal/ft					g	
Pump Intake D		ft.	8 in. = 2.6	•			(Other, Specif	y)	
Well Diameter:	·	2 in.				•	•		
Start Purge Tir	ne:	0945	•	indicate units					
Elapsed Time	Depth To Water (ft bmp)	Temperature (Celsius)	pH (SU)	Specific Conductivity (mS/cm)	ORP (mV)	Dissolved Oxygen (mg/l)	Turbidity (NTU)	Flow Rate (ml/min)	
0950	25.55	15.67	12.89	7.75	38	0.00	999	400	
0955	25.55	15.55	12.82	7.04	45	0.00	999	400	
1000	25.55	15.71	12.82	7.00	47	0.00	999	400	
1005	25.55	15.76	12.87	7.40	48	0.00	999	400	
1010	25.55	15.81	12.92	7.84	52	0.00	999	400	
1015	25.55	15.79	12.97	8.54	59	0.00	999	400	
1020	25.55	15.71	13.01	9.15	64	0.00	999	400	
1025	25.55	15.87	13.08	9.95	72	0.00	999	400	
1030	25.55	15.83	13.08	9.94	74	0.00	999	400	
1035	25.55	15.88	13.07	9.68	74	0.00	999	400	
1040	25.55	15.84	13.08	9.79	76	0.00	999	400	
1045	25.55	15.86	13.10	10.40	79	0.00	999	400	
1050	25.55	15.90	13.11	10.60	77	0.00	999	400	
1055	25.55	16.08	13.11	10.40	84	0.00	999	400	
1100	25.55	16.56	13.11	10.60	81	0.00	999	400	
1105	25.55	16.42	13.09	9.93	79	0.00	999	400	
1110	25.55	16.45	13.08	9.92	78	0.00	999	400	
1115	25.55	16.34	13.08	9.96	78	0.00	999	400	
1120	25.55	16.34	13.10	10.00	77	0.00	999	400	
Stabilization	Δ ≤ 0.3'	± 3%	± 0.1	± 3%	± 10 mV	± 10%	± 10%	100 ≤ X ≤ 500	
End Purge Tim Water sample Time collected Physical appe	: 1125 earance at start	125  oudy Brownish Yel	low	Total volume of		removed: earance at sam Color	38 L pling Cloudy Brown	ish Yellow	
Sheen/Free Pr		one	- -		Sheen/F	Odor Free Product	None None	- -	
Analytical Par	ameters:								
Container S	Size Co	ontainer Type	# Collect	ed Field	d Filtered	Preservat	ive	Lab	
40 ml		Vial	3		N	HCL		Accutest	
500 ml		<u>P</u>	2		N/Y	None		Accutest	
500 ml		Р	1		N	HNO3		Accutest	
Notes:	l		1	<u> </u>		L			

	BRIEN	8 GERE		Low Fl	low Grou	nd Water S	ampling	Log	
Date:	9/15/2015	Perso	nnel:	D. M	longiardo	Weather:	Sunny 6	60's	
Site Name:	Evor Phillips	<del></del>	/Controller ID		onsoon	Well #:	ISCO-M\		
	Old Bridge, N		ling Method:		w-Flow	Project #:	51308		
	uip. Used (includ		-		VV-1 10 VV	_ 1 10,601 #.	31300	<u> </u>	
Well informat		de 1D#). 19923		tor Multipliana	<u> </u>	* Measurements taken from			
Depth of Well*		19.85 ft.	2 in. = 0.1	eter Multipliers		X	Top of Well Ca	acina	
Depth to Wate	_	18.81 ft.	4 in. = 0.1	-		^	Top of Well Co	-	
Length of Wat		1.02 ft.	6 in. = 1.4	-			Top of Frotoot	ave easing	
Pump Intake [		ft.	8 in. = 2.6	-			(Other, Specify	y)	
Well Diameter	: <u> </u>	2 in.					•		
Start Purge Ti	me:	0907		in dia ata unita	•				
	Depth To			indicate units Specific				Ī	
Elapsed Time	Water (ft bmp)	Temperature (Celsius)	pH (SU)	Conductivity (mS/cm)	ORP (mV)	Dissolved Oxygen (mg/l)	Turbidity (NTU)	Flow Rate (ml/min)	
0956	-	16.50	4.05	0.174	389	3.92	0.0	-	
1014	-	16.56	4.13	0.174	305	3.41	298	-	
		+							
		+							
		+							
		+							
	4 4 0 21	1 00/		221	40.14	1 400/	100/	1 400	
Stabilization	Δ ≤ 0.3'	± 3%	± 0.1	± 3%	± 10 mV	± 10%	± 10%	100 ≤ X ≤ 500	
End Purge Tin	ne:	1023							
Water sample	<b>)</b> :								
Time collected				Total volume of			0.75 gal		
Physical appe	earance at start Color C				Physical app	pearance at samp Color	<b>pling</b> Clear/Yellowis	.h	
		loudy/Yellowish one	=			Odor	None	<u></u>	
Sheen/Free Pi		one	-		Sheen/l	Free Product	None	-	
Analytical Pa	rameters:							-	
Container		ontainer Type	# Collect	ed Field	d Filtered	Preservat	ive	Lab	
40 ml		Vial	3		N	HCL		Accutest	
500 ml		Р	2		N / Y	None		Accutest	
500 ml		Р	1		N	HNO3		Accutest	
						1	<del>-  </del>		
Notes:		low top of pump				<u> </u>			
		was only capable		ourge					
ĺ	Well volume =	0.169 gal, 3 well vo	ol						

О ОВ	RIEN	GERE		Low FI	ow Grou	nd Water S	ampling	Log	
Date:	9/15/2015	Persor	nnel:	K. 1	Biegert	Weather:	Clear	30°	
Site Name:	Evor Phillips	Pump/	Controller ID		nsoon	- Well #:	ISCO-M		
Site Location: O		•	ing Method:		w-Flow	Project #:			
Monitoring Equip.		•	ŭ			_		<u>-                                      </u>	
Well information	•	1011). 11201		eter Multipliers		* Measuremen	ts taken from		
Depth of Well*:	•	32.60 ft.	2 in. = 0.1	·		X	Top of Well C	Casing	
Depth to Water*:		23.05 ft.	4 in. = 0.6	•			Top of Protect	•	
Length of Water C	Column:	ft.	6 in. = 1.4	•			·	· ·	
Pump Intake Dept	th:	ft.	8 in. = 2.6	11 gal/ft		fy)			
Well Diameter:		<u>2</u> in.							
Start Purge Time:				indicate units					
Elapsed Time	Depth To Water (ft bmp)	Temperature (Celsius)	pH (SU)	Specific Conductivity (mS/cm)	ORP (mV)	Dissolved Oxygen (mg/l)	Turbidity (NTU)	Flow Rate (ml/min)	
1157	23.05	19.82	5.83	0.421	80	0.98	999	400	
1202	23.05	17.07	5.51	0.434	65	0.00	999	400	
1207	23.05	14.33	5.37	0.461	74	0.00	653	400	
1212	23.05	15.02	5.36	0.462	74	0.00	209	400	
1217	23.05	15.35	5.36	0.458	74	0.00	110	400	
1222	23.05	15.20	5.35	0.464	76	0.00	35.8	400	
1227 1232	23.05	15.28 15.38	5.35 5.31	0.465 0.465	76 78	0.00	38.2 16.2	400 400	
	olor Yell	ow	± 0.1	± 3%	-	earance at samp Color	Clear	100 ≤ X ≤ 500	
Sheen/Free Produ Analytical Param Container Size	eters:	tainer Type	# Collect	ed Field	Filtered	Odor Free Product  Preservat	None None ive	Lab	
40 ml		Vial P	9	1	N N / Y	HCL None		Accutest Accutest	
000 1111		 		6 N/Y None //					

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MS/MSD collected

<b>6</b> 0	BRIEN	N & GERE		Low FI	ow Groui	nd Water S	amplir	ng Log		
Date:	9/15/2015	5 Persor	nnel:	D. M	ongiardo	Weather:	Cle	ear, 80		
Site Name:	Evor Phillip	os Pump/	Controller ID		nsoon	Well #:		O-MW-7		
Site Location:		<del></del>	ing Method:		w-Flow	Project #:	51308			
		<del></del>	Ü		/V-1 10 W	1 10,601 #.		71300		
Monitoring Equ		lude ID#): 19925		ton Multipliana		* 14	4- 4-l fu			
Well information  Depth of Well*		22.60.#		eter Multipliers		* Measuremen	1			
Depth to Wate		22.60 ft. 19.95 ft.	2 in. = 0.1 4 in. = 0.6	•		X		ell Casing otective Casing		
Length of Wate		15.55 ft.	6 in. = 1.4	•			TOP OF I	otconve dasing		
Pump Intake D		ft.	8 in. = 2.6	•			(Other, S	pecify)		
Well Diameter:								• •		
Start Purge Tir	me:	1259	<u>.                                    </u>	indicate units						
Elapsed Time	Depth To Water (ft bmp)	Temperature (Celsius)	pH (SU)	Specific Conductivity (mS/cm)	ORP (mV)	Dissolved Oxygen (mg/l)	Turbidi (NTU	-		
1300	19.95	18.73	10.16	11.80	221	2.43	999	400		
1305	20.78	17.27	7.94	4.71	288	0.30	999	300		
1310	20.92	17.27	6.86	4.81	332	0.00	999	400		
1315	20.84	17.21	6.67	4.82	348	0.00	999	400		
1320	21.16	16.56	7.49	7.74	336	0.00	999	400		
1325	21.32	17.30	8.29	7.81	311	0.00	999	400		
1330	21.36	17.56	7.52	6.80	309	0.45	665	400		
1335	21.38	17.54	7.18	6.34	339	0.00	342	400		
1340	21.39	17.57	7.10	6.07	353	0.00	256	400		
			Pυ	ımp Cha	nge					
1400	21.68	17.01	7.21	6.28	319	0.00	999	400		
1405	21.05	17.01	7.28	6.24	325	0.00	999	400		
1410	20.65	17.06	7.53	6.90	324	0.00	999	400		
1415	20.55	17.11	7.46	6.91	324	0.00	931	400		
1420	20.56	17.21	7.99	6.63	325	0.00	652	400		
1425	20.56	17.58	8.06	7.18	328	0.00	999	400		
1430	20.58	17.59	8.15	7.20	320	0.00	800	400		
Stabilization	Δ ≤ 0.3'	± 3%	± 0.1	± 3%	± 10 mV	± 10%	± 10%	6 100 ≤ X ≤ 500		
End Purge Tim	ne:	1435								
Water sample										
Time collected	-			Total volume of			31.5 L			
Physical appe			h.,		Physical app	earance at samp Color	•	allow/Cloudy		
		Orange/Yellow/Cloud None	iy			Odor	None	ellow/Cloudy		
Sheen/Free Pr		None	•		Sheen/F	ree Product	None			
Analytical Par										
Container S	Size	Container Type	# Collect	ed Field	Filtered	Preservat	ive	Lab		
40 ml		Vial	3		N L/V	HCL		Accutest		
500 ml		<u>Р</u> Р	2		N/Y	None HNO3	+	Accutest		
500 ml		٢	1		N	HNO3		Accutest		

At 1345 pump change occurred due to pump failure

	O'BRIEN & GERE			LOWII	OW GIOU	nd Water S		
Date:	9/16/2015	Persor	nnel:	D. M	ongiardo	Weather:	Sunny 9	90's
Site Name:	Evor Phillips	Pump/	Controller ID	)#: <u>Mc</u>	nsoon	Well #:	ISCO-MW-8	
Site Location:	Old Bridge, NJ	Sampl	ing Method:	Lov	w-Flow	Project #:	5130	8
Monitoring Equip. Used (include ID#): 19925 U-52		_						
Well informat	ion:	·	Well Diame	ter Multipliers		* Measuremer	its taken from	
Depth of Well*	:	26.52 ft.	2 in. = 0.16	63 gal/ft		Х	Top of Well C	asing
Depth to Wate		24.14 ft.	4 in. = 0.6	•			Top of Protec	•
Length of Wat	er Column:	ft.	6 in. = 1.46	69 gal/ft			1	-
Pump Intake D	Depth:	ft.	8 in. = 2.6	11 gal/ft			(Other, Specif	fy)
Well Diameter	: <u> </u>	2 in.					_	
Start Purge Ti	me:	1143		indicate units				
Elapsed Time	Depth To Water (ft bmp)	Temperature (Celsius)	pH (SU)	Specific Conductivity (mS/cm)	ORP (mV)	Dissolved Oxygen (mg/l)	Turbidity (NTU)	Flow Rate (ml/min)
1145	24.49	19.54	13.73	51.4	145	0.00	999	400
1150	24.49	18.13	13.76	41.9	151	0.00	591	400
1155	24.54	17.80	13.76	39.4	148	0.00	366	400
1200	24.54	17.96	13.73	37.9	142	0.00	165	400
1205	24.54	17.72	13.72	36.6	139	0.00	73.7	400
1210	24.54	17.98	13.69	35.7	136	0.00	41.9	400
1215	24.54	18.18	13.68	35.4	136	0.00	24	400
1220	24.54	18.19	13.68	35.1	133	0.00	18	400
1225	24.58	17.97	13.67	34.8	132	0.00	5.2	400
Stabilization	Δ ≤ 0.3'	± 3%	± 0.1	± 3%	± 10 mV	± 10%	± 10%	100 ≤ X ≤ 500
End Purge Tin Water sample Time collected Physical appe	t: 1230 earance at start	udy Brownish Yel		Total volume of	-	removed: earance at sam Color Odor	18 L  pling Clear Yellowis None	<u></u>
Sheen/Free Pi			•		Sheen/F	Free Product	None	_
		ne	-		Sneen/i	-ree Product	None	
Analytical Par Container S		ntainer Type	# Collecte	ed Field	Filtered	Preservat	ive	Lab
Ou itali lei v	5120 001	Vial	3	i ielu	N	HCL		Lab

### 

Date:	9/15/2015	Persor	nnel:	D. Mo	ongiardo	Weather:	Sunny 80's		
Site Name:	Evor Phillips	Pump	Controller ID		Monsoon		ISCO-MW-9		
		•				Well #:			
Site Location:	Old Bridge, NJ	Sampl	ing Method:	Lov	v-Flow	Project #:	5130	8	
Monitoring Eq	uip. Used (include	ID#): 19925	U-52			<u> </u>			
Well informat	ion:		Well Diamet	ter Multipliers		* Measuremer	its taken from		
Depth of Well*	:	24.85 ft.	2 in. = 0.16	63 gal/ft		X	Top of Well C	asing	
Depth to Wate	r*:	22.72 ft.	4 in. = 0.65	53 gal/ft			Top of Protect	tive Casing	
ength of Wat	er Column:	2.13 ft.	6 in. = 1.46	69 gal/ft					
Pump Intake [	Depth:	ft.	8 in. = 2.61	11 gal/ft			(Other, Speci	fy)	
Well Diameter	: <u> </u>	<u>2</u> in.							
Start Purge Ti	me:	1130		indicate units					
Elapsed Time	Depth To Water (ft bmp)	Temperature (Celsius)	pH (SU)	Specific Conductivity (mS/cm)	ORP (mV)	Dissolved Oxygen (mg/l)	Turbidity (NTU)	Flow Rate (ml/min)	
1135	22.80	15.73	5.87	0.760	344	0.00	1000	500	
1140	23.08	14.46	5.60	0.598	382	0.00	483	500	
1145	23.11	14.38	5.68	0.626	410	0.00	237	500	
1150	23.04	14.93	5.70	0.636	429	0.00	192	500	
1155	23.06	15.01	5.68	0.644	395	0.00	103	500	
1200	23.09	14.50	5.57	0.555	432	0.00	83	500	
1205	23.08	14.55	5.64	0.617	455	0.00	62.1	500	
1210	23.09	14.56	5.60	0.566	470	0.00	18.4	500	
1215	23.09	14.68	5.60	0.587	475	0.00	17.4	500	
1220	23.10	14.54	5.59	0.578	482	0.00	14.5	500	
						• • • •			
								1	
Stabilization	Δ ≤ 0.3'	± 3%	± 0.1	± 3%	± 10 mV	± 10%	± 10%	100 ≤ X ≤ 500	
End Purge Tin  Water sample  Time collected	<del></del>	225		Total volume of <sub>I</sub>	-	removed:	6.6 gal		
Pnysical appe		low Cloudy			Physical app	Color	Clear		
	Odor Nor		•			Odor	None	_	
Sheen/Free P			-		Sheen/l	Free Product	None	_	

Container Size	Container Type	# Collected	Field Filtered	Preservative	Lab
40 ml	Vial	3	N	HCL	Accutest
500 ml	Р	2	N/Y	None	Accutest
500 ml	Р	1	N	HNO3	Accutest
	•				
Notos					

10100.	

<b></b>	BRIEN	5 GERE		Low F	low Grou	nd Water S	amplin	g Log	
Date:	9/15/2015	Persor	nnel:	K.	Biegert	Weather:	Sun	iny, 80	
Site Name:	Evor Phillips	-	Controller IE		onsoon	- Well #:			
		<del>-</del>					MW-10S		
	Old Bridge, NJ	-	ing Method:	L0	w-Flow	Project #:	5	1308	
	uip. Used (include	e ID#): 14257			T				
Well informat				eter Multipliers		* Measuremen	Ī		
Depth of Well*		31.30 ft.	2 in. = 0.1	•		Х	Top of We	J	
Depth to Wate	-	20.45 ft.	4 in. = 0.6	•			Top of Pro	tective Casing	
Length of Wat		ft.	6 in. = 1.4	•			(Othor Co	o oifu)	
Pump Intake D Well Diameter	· -	ft. 4 in.	8 in. = 2.6	11 gai/π			(Other, Sp	ecity)	
Start Purge Ti		1034	_	indicate units	_				
Elapsed Time	Depth To Water (ft bmp)	Temperature (Celsius)	pH (SU)	Specific Conductivity (mS/cm)	ORP (mV)	Dissolved Oxygen (mg/l)	Turbidit (NTU)	•	
1035	20.65	15.05	5.99	0.458	209	0.66	367	400	
1040	20.65	14.56	5.41	0.494	234	0.00	13.6	400	
1045	20.65	14.78	5.31	0.482	241	0.00	7.1	400	
1050	20.65	15.02	5.35	0.467	249	0.11	2.8	400	
1055	20.65	14.80	5.34	0.457	255	0.14	3.6	400	
1100	20.65	14.23	5.33	0.441	255	0.00	0.2	400	
1105	20.65	14.33	5.33	0.430	255	0.00	0.1	400	
1110	20.65	14.18	5.35	0.427	264	0.00	0.0	400	
1115	20.65	14.55	5.35	0.425	268	0.00	0.0	400	
1120	20.65	15.34	5.36	0.423	271	0.00	0.0	400	
Stabilization	Δ ≤ 0.3'	± 3%	± 0.1	± 3%	± 10 mV	± 10%	± 10%	100 ≤ X ≤ 500	
End Purge Tin Water sample Time collected Physical appe	2: 1125 earance at start Color Cle Odor No	ne	- -	Total volume of	Physical app	removed: earance at samp Color Odor Free Product	20 L  Dling Clear  None  None		
Analytical Par	rameters:								
Container		ntainer Type	# Collect	ed Field	d Filtered	Preservat	ive	Lab	
40 ml		Vial	3		N	HCL		Accutest	
500 ml		Р	2		N / Y	None		Accutest	
500 ml		Р	1		N	HNO3		Accutest	
			1						

<b>5</b> 0	BRIEN	5 GERE		Low FI	ow Grou	nd Water S	ampling	Log
Date:	9/15/2015	Perso	nnel:	K.	Biegert	Weather:	Clear, 7	75°
Site Name:	Evor Phillips	•	/Controller ID		nsoon	- Well #:	MW-14	
	Old Bridge, NJ	•	ling Method:		w-Flow	Project #:	51308	
		•	•	LO	W-1 10 W	_ Floject #.	31300	<u> </u>
	uip. Used (include	: ID#): 14257	ī			* Management	to tolera franc	
Well informat Depth of Well*		17.45 ft.	2 in. = 0.1	eter Multipliers		* Measuremen	Top of Well Ca	aaina
Depth to Wate		7.10 ft.	4 in. = 0.6	J		^	Top of Protect	•
Length of Wate		ft.	6 in. = 1.4	•			TOP OF TOLOGO	ive easing
Pump Intake D		ft.	8 in. = 2.6	-			(Other, Specif	y)
Well Diameter	: <u> </u>	4 in.						
Start Purge Tir	me:		•	in dia ata conita				
	Depth To			indicate units Specific		T		
Elapsed Time	Water (ft bmp)	Temperature (Celsius)	pH (SU)	Conductivity (mS/cm)	ORP (mV)	Dissolved Oxygen (mg/l)	Turbidity (NTU)	Flow Rate (ml/min)
0842	7.15	14.89	8.59	1.41	65	2.27	22.8	400
0847	7.15	14.32	5.93	1.04	140	2.83	13.1	400
0852	7.15	14.43	5.77	1.04	144	3.08	13.3	400
0857	7.15	14.32	5.60	1.02	155	3.48	13.2	400
0902	7.15	14.44	5.57	0.994	161	3.35	11.1	400
0907	7.15	14.37	5.49	0.963	173	3.69	8.5	400
	I	I		Away from pum	•			
0917	7.15	14.42	5.49	0.930	185	3.68	2.6	400
0922	7.15	14.48	5.52	0.929	184	3.65	1.6	400
0927	7.15	14.51	5.51	0.931	193	3.66	0.5	400
Stabilization	Δ ≤ 0.3'	± 3%	± 0.1	± 3%	± 10 mV	± 10%	± 10%	100 ≤ X ≤ 500
End Purge Tim Water sample Time collected Physical appe	: :	935 ar		Total volume of		removed: pearance at samp Color	22 L <b>Dling</b> Clear	
	Odor Nor	ne	_			Odor	None	_
Sheen/Free Pr	oduct Noi	ne	<u> </u>		Sheen/I	Free Product	None	<u>-</u>
Analytical Par	ameters:							
Container S	Size Cor	ntainer Type	# Collect	ed Field	Filtered	Preservat	ive	Lab
40 ml		Vial	3		N N / V	HCL		Accutest
500 ml 500 ml		<u>Р</u> Р	1		N / Y N	None HNO3		Accutest Accutest
อบบ เปเ		Г	1		IN	HINU3		Accutest
Notes:	Pump set to	10' below toc						

2RND2-MW-14SS-091515

### O'BRIEN 5 GERE **Low Flow Ground Water Sampling Log** Date: 9/15/2015 Personnel: K. Biegert Weather: Sunny, 75° MW-14SD Site Name: Evor Phillips Pump/Controller ID#: Monsoon Well #: Sampling Method: Site Location: Old Bridge, NJ Low-Flow Project #: 51308 Monitoring Equip. Used (include ID#): 14257 U-52 Well information: Well Diameter Multipliers Measurements taken from Depth of Well\*: 17.45 ft. 2 in. = 0.163 gal/ft Top of Well Casing 7.10 ft. Depth to Water\*: 4 in. = 0.653 gal/ftTop of Protective Casing Length of Water Column: 6 in. = 1.469 gal/ft ft. 8 in. = 2.611 gal/ft Pump Intake Depth: ft. (Other, Specify) 4 in. Well Diameter: Start Purge Time: indicate units Depth To Specific **Elapsed Temperature** ORP Dissolved **Turbidity** Flow Rate Water Conductivity Time (Celsius) (mV) Oxygen (mg/l) (NTU) (ml/min) (ft bmp) pH (SU) (mS/cm) 0935 7.15 13.75 5.71 1.01 177 4.22 999 400 0.941 999 400 0940 7.15 14.14 5.86 160 2.77 0.909 0945 7.15 14.67 5.92 171 2.68 999 400 0950 7.15 14.60 5.95 0.922 164 2.67 999 400 0955 7.15 14.84 5.94 0.921 163 2.65 999 400 1000 7.15 14.82 5.95 0.921 162 2.61 999 400 1005 7.15 14.80 5.95 0.922 161 2.59 999 400 Stabilization $\Delta \leq 0.3$ ± 3% $\pm 0.1$ ± 3% ± 10 mV ± 10% ± 10% $100 \le X \le 500$ End Purge Time: 1020 Water sample: Time collected: Total volume of purged water removed: 1010 14 L Physical appearance at start Physical appearance at sampling Color Blackish Black Color Odor None Odor None Sheen/Free Product None Sheen/Free Product None **Analytical Parameters:** Container Size Container Type # Collected Field Filtered Preservative Lab 40 ml Vial Ν HCL Accutest 500 ml Ρ 2 N/YNone Accutest Р 500 ml 1 Ν HNO3 Accutest

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0944 empty flow cell

Pump set to 15' hgs. Pump touched bottom of well.

<b>6</b> 0	BRIEN	5 GERE		Low FI	ow Grou	nd Water S	amplir	ng Log
Date:	9/16/2015	Persor	nnel:	D. M	longiardo	Weather:	Sur	nny 70's
Site Name:	Evor Phillips	_	Controller ID		onsoon	- Well #:		1-BT-2
	Old Bridge, NJ	<del>-</del>	ling Method:		w-Flow	Project #:		1308
		_	· ·	LO	N-LIOW	Fioject #.		1300
	uip. Used (include	e ID#): 19925		N. A M. San Danas		* N.A a	· · ·	
Well informati		26 E0 ft		ter Multipliers		* Measuremen	7	
Depth of Well* Depth to Wate		36.59 ft. 26.31 ft.	2 in. = 0.16 4 in. = 0.65	•	1	X	Top of Pro	ell Casing otective Casing
Length of Wate		20.31 It.	6 in. = 1.46	•		-	Top or i	Jiective Casing
Pump Intake D		ft.	8 in. = 2.61	•	1		(Other, Sp	pecify)
Well Diameter:	· —	2 in.		ŭ			1,	• •
Start Purge Tir	me:	0810		teettee ta conta				
Elapsed Time	Depth To Water (ft bmp)	Temperature (Celsius)	pH (SU)	Specific Conductivity (mS/cm)	ORP (mV)	Dissolved Oxygen (mg/l)	Turbidi (NTU)	*
0815	26.48	14.44	13.48	25.2	58	0.00	999	400
0820	26.48	14.64	13.21	15.9	41	0.00	999	400
0825	26.48	14.62	13.09	13.2	35	0.00	999	400
0830	26.48	14.58	13.00	11.3	25	0.00	999	400
0835	26.48	14.90	12.91	9.74	19	0.00	999	350
0840	26.47	14.89	12.85	9.08	19	0.00	999	350
0845	26.47	14.80	12.84	8.70	18	0.00	999	350
0850	26.47	14.62	12.79	7.86	14	0.00	813	350
0855	26.47	14.51	12.76	7.45	13	0.00	955	350
0900	26.47	14.85	12.71	7.08	17	0.00	999	350
0905	26.48	14.77	12.71	7.10	18	0.00	999	350
0910	26.48	14.80	12.71	6.98	19	0.00	940	350
0915	26.48	14.90	12.69	6.83	21	0.00	893	350
			<del>                                     </del>			<del> </del>		
Stabilization	Δ ≤ 0.3'	± 3%	± 0.1	± 3%	± 10 mV	± 10%	± 10%	6 100 ≤ X ≤ 500
End Purge Tim Water sample Time collected Physical appe Sheen/Free Pr Analytical Par Container S	10920   1092	oudy Brownish Yell one			Physical appo	removed: earance at samp Color Odor Free Product Preservat	None None	rownish Yellow
40 ml	size Co	Vial	# Collecte	tu Fleid	N	HCL	ive	Accutest
500 ml		P	4	<del></del>	N / Y	None		Accutest
500 ml		P	2	<del></del>	N	HNO3		Accutest

DUP taken here



	BITIEN	OGERE		LOW F	low Grou	iliu vvalei S	amping	Log
Date:	10/16/2015	Persor	nnel:	K.	Teitsma	Weather:	60°F Cl	ear
Site Name:	Evor Phillips	- Pump	/Controller ID	D#: Monsoon /	/ # 030731	Well #:	IW1-BT	Γ-2
Site Location:	Old Bridge, NJ	- Samp <sup>r</sup>	ling Method:	Lo	w-Flow	— Project #:	51308	8
	uip. Used (include	_	a U-52 #		245/21061	_ '		<del></del>
Well informat		, IDII J. 1101		eter Multipliers	10/2/1001	* Measuremer	eta taken from	
Depth of Well*		36.60 ft.	2 in. = 0.1	•		X	* Measurements taken from	
Depth to Wate		26.22 ft.	4 in. = 0.1	•		^	Top of Well Casing Top of Protective Casing	
Length of Wate		ft.	6 in. = 1.4	-			Top of Flotective Casing	
Pump Intake D		ft.	8 in. = 2.6	•			(Other, Specify	iv)
Well Diameter	· —	2 in.		ŭ			1,	• •
Start Purge Tir	me:	1040		indicate units	<del></del>			
Elapsed Time	Depth To Water (ft bmp)	Temperature (Celsius)	pH (SU)	Specific Conductivity (mS/cm)	ORP (mV)	Dissolved Oxygen (mg/l)	Turbidity (NTU)	Flow Rate (ml/min)
1040	26.39	15.98	12.77	7.32	163	1.40	0.0	400
1045	26.40	16.74	12.66	6.59	167	1.14	0.0	400
1050	26.40	16.01	12.42	5.18	180	1.29	0.0	350
1055	26.40	15.90	12.29	4.68	187	1.24	0.0	350
1100	26.40	15.91	12.14	4.32	193	1.14	679	350
1105	26.40	15.86	11.93	3.92	204	1.05	741	350
1110	26.40	16.15	11.98	4.01	192	1.02	692	350
1115	26.40	16.21	11.95	3.97	196	0.94	740	350
1120	26.40	16.21	11.88	3.83	204	0.94	523	350
1125	26.40	16.36	11.87	3.81	206	0.86	500	350
1130	26.40	16.31	11.82	3.71	214	0.95	480	350
1135	26.40	16.31	11.80	3.72	217	0.91	507	350
Stabilization	Δ ≤ 0.3'	± 3%	± 0.1	± 3%	± 10 mV	± 10%	± 10%	100 ≤ X ≤ 500
End Purge Tim		140 W1-BT-2-101615						
Time collected		_		Total volume of	-		22 L	
Physical appe	earance at start	<u> </u>			Physical app	pearance at samp	-	
		oudy Brownish Tar	<u>1</u>			Color	Clear/Yellow T	<u>ſi</u> nt
Sheen/Free Pr	Odor Noi roduct Noi		- -		Sheen/	Odor /Free Product	None None	- -
Analytical Par	rameters:							
Container S		ntainer Type	# Collect	ted Field	d Filtered	Preservat	iive	Lab
40 ml		Vial	3		N	HCL		Accutest
500 ml		P	2	!	N/Y	None		Accutest
500 ml		Р	1		N	HNO3		Accutest
	<del></del>		<del> </del>	<del></del>		+	-+	
	<del></del>		+	<del></del>		+		
Notes:								
110.00.								

### O'BRIEN 5 GERE **Low Flow Ground Water Sampling Log** Date: 10/16/2015 Personnel: D. Mongiardo Weather: Clear 50's Pump/Controller ID#: Well #: ISCO-MW-2 Site Name: Evor Phillips Bailer Sampling Method: Site Location: Old Bridge, NJ Low-Flow Project #: 51308 Monitoring Equip. Used (include ID#): Horriba U-52 # Well information: Well Diameter Multipliers Measurements taken from Depth of Well\*: 23.55 ft. 2 in. = 0.163 gal/ft Top of Well Casing 22.21 ft. Depth to Water\*: 4 in. = 0.653 gal/ftTop of Protective Casing Length of Water Column: 1.34 ft. 6 in. = 1.469 gal/ft 8 in. = 2.611 gal/ft (Other, Specify) Pump Intake Depth: ft. 2 in. Well Diameter: Start Purge Time: 0822 indicate units Depth To Specific **Elapsed Temperature** ORP Dissolved **Turbidity** Flow Rate Water Conductivity Time (Celsius) (mV) Oxygen (mg/l) (NTU) (ml/min) (mS/cm) (ft bmp) pH (SU) Well Volume 22.96 10.37 38.9 263 7.97 999 2 Well Volume 22.98 10.54 999 38.3 320 2.51 3 Well Volume 23.04 10.51 37.7 350 2.75 999 Stabilization Δ ≤ 0.3' ± 3% $\pm 0.1$ ± 3% ± 10 mV ± 10% ± 10% $100 \le X \le 500$ End Purge Time: Water sample: Time collected: Total volume of purged water removed: 1145 0.66 gal Physical appearance at start Physical appearance at sampling Color Yellowish/Brown Cloudy Yellowish Brown Cloudy Color Odor None Odor None Sheen/Free Product None Sheen/Free Product None **Analytical Parameters:** Container Size Container Type # Collected Field Filtered Preservative Lab 40 ml Vial Ν HCL Accutest

## Container Size Container Type # Collected Field Filtered Preservative Lab 40 ml Vial 3 N HCL Accutest 500 ml P 2 N / Y None Accutest 500 ml P 1 N HNO3 Accutest

Notes: Well Volume = 0.22 gal
Unable to pump, bail 3 well volumes



10/15/2015 Personnel: K.Teitsma Weather: 60°F Clear Date: Site Name: Evor Phillips Pump/Controller ID#: Monsoon / # 032552 Well #: ISCO-MW-3 Site Location: Old Bridge, NJ Sampling Method: Low-Flow Project #: 51308 Monitoring Equip. Used (include ID#): Horriba U-52 # 21099/20002 Well information: Well Diameter Multipliers Measurements taken from Depth of Well\*: 29.80 ft. 2 in. = 0.163 gal/ftTop of Well Casing 25.21 ft. Depth to Water\*: 4 in. = 0.653 gal/ftTop of Protective Casing Length of Water Column: 6 in. = 1.469 gal/ft ft. Pump Intake Depth: ft. 8 in. = 2.611 gal/ft (Other, Specify) 2 in. Well Diameter: Start Purge Time: 1240 indicate units Depth To Specific **Temperature** ORP Dissolved **Turbidity** Flow Rate **Elapsed** Water Conductivity Time (Celsius) (mV) Oxygen (mg/l) (NTU) (ml/min) (ft bmp) pH (SU) (mS/cm) 1240 26.48 17.96 13.12 9.10 104 0.58 0.0 400 1245 26.48 17.96 13.22 10.6 104 1.92 0.0 400 1250 26.48 17.98 13.25 11.0 108 1.11 0.0 400 1255 24.48 17.67 13.23 10.6 111 0.96 0.0 400 1300 24.48 17.96 13.22 10.4 110 0.33 0.0 400 1305 24.48 17.59 13.16 9.73 114 0.43 0.0 400 1310 24.48 17.41 13.24 10.4 116 0.21 0.0 400 1315 24.48 17.61 13.28 11.9 115 0.04 0.0 400 1320 24.48 17.93 13.24 11.3 115 0.00 0.0 400 1325 24.48 17.97 13.24 11.2 113 0.00 0.0 400 1330 24.48 18.17 13.25 11.4 113 0.00 0.0 400 1335 24.48 17.63 13.21 10.0 116 0.00 397 400 1340 24.48 17.61 13.23 10.6 111 0.00 760 400 1345 24.48 17.74 13.24 10.7 113 0.00 852 400 1000 400 1350 24.48 18.00 13.29 12.3 112 0.00 24.48 10.4 115 0.00 1000 400 1355 17.74 13.24 1400 24.48 17.61 13.25 10.3 115 0.00 1000 400 1405 17.71 10.7 114 1000 400 24.48 13.24 0.00 1410 17.82 13.25 10.7 113 0.00 1000 400 24.48 Stabilization  $\Delta \leq 0.3$ ± 3%  $\pm 0.1$ ± 3% ± 10 mV ± 10% ± 10%  $100 \le X \le 500$ End Purge Time: 1420 2RND3-ISCO-MW-3-101515 Water sample: Time collected: 1420 Total volume of purged water removed: 40 L Physical appearance at sampling Physical appearance at start Color Cloudy Yellow Tint Cloudy Brownish/Yellow Color Odor None Odor None Sheen/Free Product None Sheen/Free Product None Analytical Parameters: Container Size # Collected Field Filtered Preservative Container Type Lab 40 ml Vial Ν HCL Accutest 500 ml Ρ 2 N/YNone Accutest Ρ 500 ml 1 Ν HNO3 Accutest Notes:

Go	BRIEN	5 GERE		L	ow FI	ow Groui	nd Water S	amplir	ng Log	
Date:	10/15/2015	Persor	nnel:		D. M	ongiardo	Weather:	Sur	nny 50's	
Site Name:	Evor Phillips	•	Controller ID		Monsoon / # 30731		Well #:		O-MW-4	_
										_
	Old Bridge, NJ		ing Method:	_		w-Flow	Project #:	5	1308	_
	uip. Used (include	ID#): Horriba	a U-52 #		1	61/19245				
Well informat			Well Diame				* Measuremen	Ī		
Depth of Well*		19.85 ft.	2 in. = 0.1	-			X	Top of We	•	
Depth to Wate		18.65 ft.	4 in. = 0.6	-				Top of Pro	otective Cas	ing
Length of Wate Pump Intake D		1.2 ft. ft.	6 in. = 1.4 8 in. = 2.6	-				(Other, Sp	necify)	
Well Diameter		it. 2 in.	0 111. = 2.0	) i i yai/i				(Other, Sp	Decity)	
Start Purge Tir										
Start Purge Til		0935			ate units		ı		1	
Elapsed Time	Depth To Water (ft bmp)	Temperature (Celsius)	pH (SU)	Cond	ecific luctivity S/cm)	ORP (mV)	Dissolved Oxygen (mg/l)	Turbidi (NTU)	•	w Rate Il/min)
0935	18.98	17.14	3.17	0.	.209	298	4.59	351		-
0940	19.00	16.19	2.97	0.	.208	392	4.96	258		-
0945	19.00	19.64	2.88	0.	.180	377	4.38	380		-
0950	19.00	18.17	3.02	0.	.179	339	3.58	243		-
0955	19.00	18.20	3.05	0.	.175	336	3.77	640		-
1000	19.00	17.90	3.01	0.	.182	341	3.85	640		
1005	19.00	17.89	3.04	0.	.178	340	3.71	896		-
1010	19.00	17.70	3.02	0.	.173	347	4.02	531		-
				<u> </u>						
				<u> </u>						
				<u> </u>						
				<u> </u>						
Stabilization	Δ ≤ 0.3'	± 3%	± 0.1	±	3%	± 10 mV	± 10%	± 10%	6 100 ≤	≤ X ≤ 500
End Purge Tim	ne: <u>10</u>	)15								
Water sample	<b>)</b> :									
Time collected				Total v		purged water r		2 gal		_
Physical appe	earance at start	1.07.11				Physical appo	earance at samp	_		
	Color Clo Odor Nor	udy/Yellow	-				Color Odor	Clear/Yell None	owish	
Sheen/Free Pr			• •			Sheen/F	ree Product	None		
Analytical Par	rameters:									
Container S	Size Cor	ntainer Type	# Collect	ted	Field	l Filtered	Preservat	ive	Lat	0
40 ml		Vial	3			N	HCL		Accut	
500 ml		P	2	<del></del>		N/Y	None		Accut	
500 ml		Р	1	$-\!\!\!+$		N	HNO3		Accut	est
			+	-+				+		

Turbidity not stabilizing due to recharge of well for small water level

<b>6</b> 0	BRIEN	5 GERE		Low FI	ow Grou	nd Water S	Sampling	Log
Date:	10/16/2015	Persor	nnel:	D. M	ongiardo	Weather:	Clear 5	0's
Site Name:	Evor Phillips	Pump/	Controller ID			- Well #:	ISCO-M	W-5
		•	ing Method:		<i></i> 002002 w-Flow	_		
	Old Bridge, NJ	•	Ü			Project #:	5130	<u>8</u>
	uip. Used (include	: ID#): Horrida	a U-52 #		99/20002			
Well informati				ter Multipliers		* Measuremen	1	
Depth of Well*		32.60 ft.	2 in. = 0.16	•		X	Top of Well C	•
Depth to Wate		22.85 ft.	4 in. = 0.6	•			Top of Protec	tive Casing
Length of Wate		9.75 ft.	6 in. = 1.46	•				
Pump Intake D Well Diameter:	· —	ft. 2 in.	8 in. = 2.6°	11 gal/ft			(Other, Specif	
Start Purge Tir	me:	1005		indicate units				
Elapsed Time	Depth To Water (ft bmp)	Temperature (Celsius)	pH (SU)	Specific Conductivity (mS/cm)	ORP (mV)	Dissolved Oxygen (mg/l)	Turbidity (NTU)	Flow Rate (ml/min)
1005	22.99	15.85	7.89	0.502	-5	1.44	803	400
1010	23.01	16.10	6.45	0.448	37	1.02	712	400
1015	23.01	16.09	5.37	0.414	57	0.21	210	400
1020	23.01	16.06	5.31	0.411	57	0.15	181	400
1025	23.01	16.06	5.18	0.402	59	0.00	90.4	400
1030	23.01	16.22	5.16	0.400	59	0.00	67.4	400
1035	23.02	16.25	5.12	0.399	61	0.00	39.3	400
1040	23.02	16.12	5.11	0.395	61	0.00	21.7	400
1045	23.02	16.08	5.10	0.392	61	0.00	13.7	400
1050	23.02	16.21	5.09	0.391	61	0.00	8.6	400
1055	23.02	16.25	5.09	0.392	61	0.00	2.3	400
								1
Stabilization	Δ ≤ 0.3'	± 3%	± 0.1	± 3%	± 10 mV	± 10%	± 10%	100 ≤ X ≤ 500
End Purge Tim Water sample Time collected Physical appe Sheen/Free Pr Analytical Par	1100   1100	100 - llowish Cloudy ne		Total volume of	purged water Physical app		20 L	
Container S	Size Cor	ntainer Type	# Collecte	ed Field	Filtered	Preservat	tive	Lab
40 ml		Vial	3		N	HCL		Accutest

•					
Container Size	Container Type	# Collected	Field Filtered	Preservative	Lab
40 ml	Vial	3	N	HCL	Accutest
500 ml	Р	2	N/Y	None	Accutest
500 ml	Р	1	N	HNO3	Accutest
Notes:					

Notes:		



	BRIEN	6 GERE		Low FI	Low Flow Ground Water Sampling Log					
Date:	10/15/2015	Perso	nnel:	D. M	ongiardo	Weather:	Sunny 6	60's		
Site Name:	Evor Phillips	— S Pump	/Controller IE	D#: Monsoon /	# 30731	Well #:	ISCO-MW-7			
Site Location:	Old Bridge, N	<del>—</del> IJ Samp	ling Method:	Lov	w-Flow	Project #:	51308	<del></del>		
Monitoring Equ	uip. Used (inclu		a U-52 #21061/192		61/19245	_				
Well informat		,		eter Multipliers		* Measuremer	nts taken from			
Depth of Well*		22.60 ft.	2 in. = 0.163 gal/ft			X Top of Well Casing		asina		
Depth to Wate	_	19.90 ft.	4 in. = 0.6	•		Top of Protective Cas		ŭ		
Length of Wat	er Column:	2.7 ft.	6 in. = 1.4	69 gal/ft	gal/ft		]			
Pump Intake D	Depth:	ft.	8 in. = 2.6	11 gal/ft			(Other, Specify	y)		
Well Diameter	· ·	<u>2</u> in.								
Start Purge Ti	me:	1230		indicate units						
Elapsed Time	Depth To Water (ft bmp)	Temperature (Celsius)	pH (SU)	Specific Conductivity (mS/cm)	ORP (mV)	Dissolved Oxygen (mg/l)	Turbidity (NTU)	Flow Rate (ml/min)		
1235	21.13	17.72	6.80	4.05	257	1.03	1000	500		
1240	21.38	17.84	6.74	3.98	252	2.07	1000	500		
1245	21.42	17.81	6.73	3.73	247	1.62	1000	500		
1250	21.30	17.67	6.72	2.76	237	1.94	1000	500		
1255	21.32	17.54	6.71	2.84	237	1.54	1000	500		
1300	21.17	17.61	6.71	2.89	238	1.42	1000	500		
1305	21.24	17.61	6.70	2.96	243	1.29	615	500		
1310	21.29	17.77	6.68	3.60	240	1.31	951	500		
1315	21.60	17.79	6.67	3.53	240	1.45	478	500		
1320	21.29	17.92	6.66	3.86	236	1.26	1000	500		
1325	21.36	17.60	6.65	3.84	243	1.63	310	500		
1330	21.33	17.81	6.64	3.20	243	1.81	537	500		
1335	21.08	18.01	6.64	3.13	243	2.43	627	500		
1340	21.16	17.77	6.64	2.87	249	1.88	317	500		
1345	21.20 21.21	17.72 17.79	6.63	2.98	249 250	1.36	254 188	500 500		
1350 1355	21.21	17.79	6.63 6.63	3.09 3.09	248	1.39 1.29	198	500		
1400	21.43	17.70	6.63	3.20	244	1.44	159	500		
1400	21.43	17.70	0.03	3.20	244	1.44	139	300		
Stabilization	Δ ≤ 0.3'	± 3%	± 0.1	± 3%	± 10 mV	± 10%	± 10%	100 ≤ X ≤ 500		
End Purge Tin Water sample Time collected Physical appe	earance at star Color		-	Total volume of	-	removed: pearance at samp Color Odor	45 L  pling  Clearish/Yellor  None	w		
Sheen/Free Pi	- T	None	<b>-</b>		Sheen/l	Free Product None				
Analytical Par										
Container	Size C	Container Type	# Collect	ed Field	Filtered	Preservat	ive	Lab		
40 ml		Vial P	3 2		<u>N</u> N / Y	HCL		Accutest		
500 ml		P	1	'	N	None HNO3		Accutest Accutest		
								_		
Notes:										



E OBRIENO GERE				LOW FI	Low Flow Ground Water Sampling Log						
Date:	10/15/2015	Persor	nnel:	nel: D. Mongiardo		Weather:	Sunny 60's				
Site Name:	Evor Phillips	Pump	/Controller ID	D#: Monsoon /	/ # 30731	Well #:	ISCO-MW-8				
Site Location:	Old Bridge, NJ	Samp'	ling Method:	Lo	w-Flow	Project #:	51308	8			
	uip. Used (include	_	oa U-52 #		061/19245	<i>- '</i>					
Well informat		71211).		eter Multipliers	1710210	* Measuremen	ets taken from				
Depth of Well*		26.52 ft.	2 in. = 0.1	·		X	Top of Well Ca	acina			
Depth to Wate		24.03 ft.	4 in. = 0.1	•			Top of Protective Casing				
Length of Water		ft.	6 in. = 1.4	-			1 00 01 1 101001	ive odding			
Pump Intake D		ft.	8 in. = 2.6	•			(Other, Specify	y)			
Well Diameter	· —	2 in.		· ·			1,	•			
Start Purge Tir	me:	1435		indicate units	<u>-                                    </u>						
Elapsed Time	Depth To Water	Temperature (Celsius)		Specific Conductivity	ORP (mV)	Dissolved Oxygen (mg/l)	Turbidity (NTU)	Flow Rate (ml/min)			
	(ft bmp)		pH (SU)	(mS/cm)	1		1	, ,			
1435	24.20	18.52	14.00	40.4	50	0.28	518	350			
1440	24.42	18.00	14.00	39.6	79	0.15	219	350			
1445	24.42	18.06	14.00	40.5	89	0.10	164	350			
1450	24.54	18.00	14.00	39.1	96	0.19	147	350			
1455	24.42	17.81	14.00	38.6	103	0.20	107	350			
1500	24.38	18.05	14.00	38.7	104	0.19	104	350			
1505	24.31	18.25	14.00	42.1	111	0.05	71.5	350			
1510	24.31	18.55	14.00	41.5	111	0.25	86.5	350			
1515	24.38	18.25	14.00	34.9	113	0.83	33.5	350			
1520	24.42	18.03	14.00	35.2	116	0.62	16.4	350			
1525	24.43	18.05	14.00	35.4	118	0.52	9.4	350			
1530	24.44	18.03	14.00	35.7	120	0.57	5.1	350			
	<del> </del>	<del> </del>	<u> </u>	<del> </del>	<del>                                     </del>	+		<del> </del>			
	<del>                                     </del>	<del> </del>	<del>                                     </del>	<del>                                     </del>	<del> </del>	+	<del> </del>	+			
	<del> </del>	<del> </del>	<del>                                     </del>	<del> </del>	<del> </del>	+	<del> </del>	<del> </del>			
	<del> </del>	<del>                                     </del>	<del> </del>	<del>                                     </del>		+	<del>                                     </del>	+			
	<del>                                     </del>	<del>                                     </del>	+	<del>                                     </del>		+	<del>                                     </del>	<del> </del>			
	<del> </del>	<del>                                     </del>	+	<del>                                     </del>	<del>                                     </del>	+	<del>                                     </del>	<del> </del>			
Stabilization	Δ ≤ 0.3'	± 3%	± 0.1	± 3%	± 10 mV	± 10%	± 10%	100 ≤ X ≤ 500			
								1			
End Purge Tim		530									
Water sample		SCO-MW-8-1016	-	- · · · ,			·= ==•				
Time collected		-		Total volume of		removed: pearance at samp	19.25 L				
Pilysical appe	earance at start Color Clo	oudy Brownish/Yel	llow		Pilysical app	color	Clear Yellow				
	Odor Nor					Odor	None	-			
Sheen/Free Pr			_		Sheen/	Free Product	None	<u>.</u> _			
Analytical Par	rameters:										
Container S		ntainer Type	# Collect	ted Field	d Filtered	Preservat	ive	Lab			
40 ml		Vial	3		N	HCL		Accutest			
500 ml		P	2	'	N/Y	None		Accutest			
500 ml		Р	1		N	HNO3		Accutest			
<u> </u>			┼──			<del> </del>					
			+	<del></del>		+	<del></del>				
Notes:											
110.00.											
				-							



O'BRIEN 5 GERE **Low Flow Ground Water Sampling Log** Date: 10/15/2015 Personnel: D. Mongiardo Weather: Sunny 50's ISCO-MW-9 Site Name: Evor Phillips Pump/Controller ID#: Monsoon / # 30731 Well #: Sampling Method: Site Location: Old Bridge, NJ Low-Flow Project #: 51308 Horriba U-52 # Monitoring Equip. Used (include ID#): 21061/19245 Well information: Well Diameter Multipliers Measurements taken from Depth of Well\*: 24.85 ft. 2 in. = 0.163 gal/ftΧ Top of Well Casing 22.26 ft. Depth to Water\*: 4 in. = 0.653 gal/ftTop of Protective Casing Length of Water Column: 2.59 ft. 6 in. = 1.469 gal/ft 8 in. = 2.611 gal/ft Pump Intake Depth: ft. (Other, Specify) 2 in. Well Diameter: Start Purge Time: 1105 indicate units Depth To Specific **Elapsed Temperature** ORP Dissolved **Turbidity** Flow Rate Conductivity Water Time (Celsius) (mV) Oxygen (mg/l) (NTU) (ml/min) (mS/cm) (ft bmp) pH (SU) 1110 22.96 15.99 5.27 1.93 280 1.35 403 450 15.94 1.93 67.4 1115 22.90 5.21 314 0.92 450 1120 23.00 15.90 5.13 1.66 333 0.84 12.5 450 1125 23.09 15.87 5.20 1.75 339 0.75 8.2 450 1130 23.09 15.83 5.19 1.82 343 0.72 7.7 450 1135 23.09 15.83 5.25 1.78 346 0.72 6.6 450 1140 23.09 15.82 5.27 1.74 347 0.67 4.8 450 1145 23.06 15.87 5.35 1.80 347 0.63 5.9 450 Stabilization  $\Delta \leq 0.3$ ± 3%  $\pm 0.1$ ± 3% ± 10 mV ± 10% ± 10%  $100 \le X \le 500$ End Purge Time: 1145 2RND3-ISCO-MW-9-101515 Water sample: Time collected: Total volume of purged water removed: 1145 18 L Physical appearance at start Physical appearance at sampling Color Clear/Yellowish Tint Clear Color Odor None Odor None Sheen/Free Product None Sheen/Free Product None Analytical Parameters: Container Size Container Type # Collected Field Filtered Preservative Lab 40 ml Vial Ν HCL Accutest 500 ml Ρ 2 N/YNone Accutest Ρ 500 ml 1 Ν HNO3 Accutest Notes: **DUP Taken here** 2RND3-DUP-101515

6	BRIEN	8 GERE		Low FI	ow Groui	nd Water S	amplin	g Log
Date:	10/16/2015	Persor	nnel:	K.T	eitsma	Weather:	55°	'Clear
Site Name:	Evor Phillips	== S Pump/	Controller ID	#: Monsoon /	# 030731	Well #:	MV	V-10S
Site Location:		<del></del>	ing Method:		w-Flow	Project #:		1308
Monitoring Equ			a U-52 #	-	45/21061	1 10,000		
	'	ide ID#). Homba			+5/21001	* Magaziraman	to tokon fro	
Well informating the Depth of Well*		31.30 ft.	2 in. = 0.10	ter Multipliers		* Measuremen	Top of We	
Depth to Wate	_	20.41 ft.	4 in. = 0.6	J		^		en Casing etective Casing
Length of Wate	_	ft.	6 in. = 1.4	•			TOP OF TO	Acoust Casing
Pump Intake D	_	ft.	8 in. = 2.6	•			(Other, Sp	ecify)
Well Diameter:	- -	4 in.						
Start Purge Tir	me:	0845		indicate units				
Elapsed Time	Depth To Water (ft bmp)	Temperature (Celsius)	pH (SU)	Specific Conductivity (mS/cm)	ORP (mV)	Dissolved Oxygen (mg/l)	Turbidi (NTU)	-
0845	20.45	15.86	4.99	0.518	388	6.92	43.2	400
0850	20.45	16.66	5.03	0.524	393	6.78	58.1	400
0855	20.45	16.99	4.88	0.164	400	3.40	35.0	400
0900	20.45	17.12	4.93	0.210	405	2.98	48.0	400
0905	20.45	17.21	4.99	0.225	406	2.32	43.4	400
0910	20.45	17.03	5.03	0.227	410	2.05	54.6	400
0915	20.45	16.54	5.23	0.547	422	0.89	89.4	400
0920	20.45	17.07	5.22	0.547	403	0.41	77.4	400
0925	20.45	17.10	5.22	0.546	407	0.31	64.8	400
0930	20.45	17.17	5.24	0.546	412	0.26	45.6	400
0935	20.45	17.07	5.25	0.540	420	0.10	25.9	400
0940	20.45	17.26	5.24	0.528	421	0.27	18.8	400
0945	20.45	17.06	5.26	0.523	421	0.00	9.3	400
0950	20.45	16.89	5.26	0.524	422	0.00	10.1	400
0. 1 111	4 < 0.2	00/	0.4	00/	40 1/	400/	400/	100 4 7 4 500
Stabilization	Δ ≤ 0.3'	± 3%	± 0.1	± 3%	± 10 mV	± 10%	± 10%	100 ≤ X ≤ 500
End Purge Tim Water sample Time collected Physical appe	2RND3			10S-101615-MS Total volume of	purged water r		28 L	
, appo		Clear			)	Color	Clear	
	_	None	•			Odor	None	<del></del>
Sheen/Free Pr	oduct 1	None	•		Sheen/F	ree Product	None	_ <del>_</del>
Analytical Par	ameters:							
Container S	Size (	Container Type	# Collecte	ed Field	l Filtered	Preservat	ive	Lab
40 ml		Vial	10		N	HCL	[	Accutest
500 ml		P	6	1	N/Y	None		Accutest

Notes:	Pump clogging due to pieces of vegetation in well	

Date:	10/15/2015 Personr		nnel:	К.Т	Teitsma	Weather:	55°F Cl	55°F Clear	
Site Name:	Evor Phillips	Pump/	/Controller ID:	)#: Monsoon /	# 032552	 Well #:	MW-14SS		
Site Location:	Old Bridge, NJ	Sampl	ling Method:	Lo'	w-Flow	Project #: 51308		<del></del> 8	
	uip. Used (include	' '	a U-52 #		99/20002	<u> </u>			
			Well Diameter Multipliers		* Measurements taken from				
Depth of Well*:		17.45 ft.	2 in. = 0.16	•	ı	Х	Top of Well Casing		
Depth to Water		6.92 ft.	4 in. = 0.65	•	i		Top of Protective Casing		
Length of Wate		ft.	6 in. = 1.46	•	ı				
Pump Intake Depth:		10 ft.	8 in. = 2.61	•	1		(Other, Specify	y)	
Well Diameter:		4 in.		ŭ	ı		1,- , , -	,,	
Start Purge Tin	ne:	0946		indicate units					
Elapsed Time	Depth To Water (ft bmp)	Temperature (Celsius)	pH (SU)	Specific Conductivity (mS/cm)	ORP (mV)	Dissolved Oxygen (mg/l)	Turbidity (NTU)	Flow Rate (ml/min)	
0946	7.06	16.59	6.15	0.698	363	3.55	89.9	350	
0950	7.06	16.75	5.98	0.678	406	3.29	84.2	350	
0955	7.06	16.83	6.00	0.667	438	2.97	82.5	350	
1000	7.06	16.70	6.00	0.656	456	2.67	78.1	350	
1005	7.06	16.75	5.97	0.642	467	3.08	81.1	350	
1010	7.06	16.74	5.95	0.622	477	3.07	75.5	350	
1015	7.06	16.65	5.95	0.620	483	3.07	75.3	350	
1020	7.06	16.60	5.94	0.621	484	3.08	71.8	350	
						<u> </u>			
						<u> </u>			
Stabilization	Δ ≤ 0.3'	± 3%	± 0.1	± 3%	± 10 mV	± 10%	± 10%	100 ≤ X ≤ 50	
End Purge Tim	ne: 10	)27							
Water sample		1W-14SS-101515							
Time collected			•	Total volume of	. •		14 L		
	earance at start				Physical app	pearance at samp			
	Color Clea		-			Color Odor	Clear None	=	
	oduct Non	ie	-		<b>.</b> ,	Free Product	None	-	

# Analytical Parameters: Container Size Container Type # Collected Field Filtered Preservative Lab 40 ml Vial 3 N HCL Accutest 500 ml P 2 N / Y None Accutest 500 ml P 1 N HNO3 Accutest Notes:

_	Evor Phillips Old Bridge, NJ	- Pump/			eitsma	Weather:	55°F Cle	<u> </u>
_	Old Bridge, NJ	lame: Evor Phillips Pump/C		0#: Monsoon /	# 032552	Well #:	MW-14SD	
_	Site Location: Old Bridge, NJ Sampling		ing Method:	Lov	w-Flow	Project #: 51308		<del></del>
	p. Used (include	-	a U-52 #		99/20002	<b>-</b> ',		
		Well Diameter Multipliers		* Measurements taken from				
Depth of Well*:		17.45 ft.	2 in. = 0.16		•		Top of Well Casing	
Depth to Water*	·-	6.92 ft.	4 in. = 0.65	•	l	X	Top of Protective Casing	
Length of Water		ft.	6 in. = 1.46	•	l			
Pump Intake De		15 ft.	8 in. = 2.61	•	Ì		(Other, Specify	y)
		4 in.		ŭ	l	(2000)		
Start Purge Time	e:	1045		indicate units				
Elapsed Time	Depth To Water (ft bmp)	Temperature (Celsius)	pH (SU)	Specific Conductivity (mS/cm)	ORP (mV)	Dissolved Oxygen (mg/l)	Turbidity (NTU)	Flow Rate (ml/min)
1045	7.10	16.05	6.18	0.681	468	2.49	544	350
1050	7.10	15.97	6.09	0.665	466	2.39	280	350
1055	7.10	16.05	6.03	0.645	482	2.31	174	400
1100	7.10	16.03	6.00	0.628	489	2.59	109	400
1105	7.10	16.15	5.97	0.607	496	2.74	73.3	400
1110	7.10	16.22	5.96	0.595	499	2.84	66.3	400
1115	7.10	16.21	5.96	0.593	500	2.87	62.1	400
1120	7.10	16.22	5.95	0.593	502	2.90	59.2	400
						<u> </u>		
Stabilization	Δ ≤ 0.3'	± 3%	± 0.1	± 3%	± 10 mV	± 10%	± 10%	$100 \le X \le 50$

# Analytical Parameters: Container Size Container Type # Collected Field Filtered Preservative Lab 40 ml Vial 3 N HCL Accutest 500 ml P 2 N / Y None Accutest 500 ml P 1 N HNO3 Accutest Notes:



						Sund Water Sampling Log			
Date:	11/13/2015	Persor	nnel:	K.T	eitsma	Weather:	Sunny 50's ISCO-MW-1		
Site Name:	Evor Phillips	Pump/	Controller ID	#: Monsoon /	# 030729	Well #:			
Site Location:	Old Bridge, NJ	- Sampl	ing Method:	Lov	Low-Flow		51308		
	ip. Used (include	_	a U-52 #	2128	34/21780	_ '			
Well informat	<u> </u>	,		ter Multipliers		* Measuremer	nts taken from		
Depth of Well*		31.54 ft.	2 in. = 0.1	·		X	Top of Well Ca	asina	
Depth to Wate		21.69 ft.	4 in. = 0.6	•			Top of Protect	-	
Length of Wate		ft.	6 in. = 1.4	•					
Pump Intake D		26 ft.	8 in. = 2.6	-	•		(Other, Specify)		
Well Diameter:		2 in.					_		
Start Purge Tir	ne:	1035		indicate units					
Elapsed Time	Depth To Water (ft bmp)	Temperature (Celsius)	pH (SU)	Specific Conductivity (mS/cm)	ORP (mV)	Dissolved Oxygen (mg/l)	Turbidity (NTU)	Flow Rate (ml/min)	
1040	21.68	14.95	5.95	0.323	242	0.00	712	250	
1045	21.68	15.40	5.89	0.322	228	0.00	475	250	
1050	21.68	15.45	5.87	0.322	222	0.00	255	250	
1055	21.68	15.62	5.87	0.323	214	0.00	96.9	250	
1100	21.68	15.20	5.88	0.322	211	0.00	34.1	250	
1105	21.68	15.20	5.86	0.323	209	0.00	23.2	250	
1110	21.68	15.31	5.86	0.323	208	0.00	13.0	250	
1115	21.68	15.35	5.87	0.323	206	0.00	7.0	250	
1120	21.68	15.45	5.87	0.324	205	0.00	9.8	250	
1125	21.68	15.52	5.85	0.324	205	0.00	4.2	250	
Stabilization	Δ ≤ 0.3'	± 3%	± 0.1	± 3%	± 10 mV	± 10%	± 10%	100 ≤ X ≤ 50	
Sheen/Free Pr	2RND4_ 1130  arance at start  Color Cle Odor No oduct No	ne	:15 - -	Total volume of	Physical app	removed: pearance at sam Color Odor Free Product	~3.5 gal pling Clear None None		
Analytical Par Container S		ntainer Type	# Collect	ed Field	Filtered	Preserva	tivo	Lab	
40 ml	,,20 00	Vial	# Collect	i leiu	N	HCL		Accutest	
500 ml		P	2	1	N/Y	None		Accutest	
500 ml		Р	1		N	HNO3		Accutest	
Notes:			<u>I</u>	<u> </u>		1			
10100.									



Date: 11/13/2015 Personnel: D. Mongiardo Weather: Clear 40's Site Name: Evor Phillips Pump/Controller ID#: Bailer Well #: ISCO-MW-2 Sampling Method: 51308 Site Location: Old Bridge, NJ Low-Flow Project #: Monitoring Equip. Used (include ID#): Horriba U-52 # 21074 Well information: Well Diameter Multipliers \* Measurements taken from Depth of Well\*: 23.55 ft. 2 in. = 0.163 gal/ftTop of Well Casing Depth to Water\*: 22.46 ft. 4 in. = 0.653 gal/ftTop of Protective Casing Length of Water Column: 1.09 ft. 6 in. = 1.469 gal/ft 8 in. = 2.611 gal/ft (Other, Specify) Pump Intake Depth: 18 ft. Well Diameter: 2 in. Start Purge Time: indicate units Depth To Specific **Elapsed Temperature ORP** Dissolved **Turbidity** Flow Rate Water Conductivity Time (Celsius) (mV) Oxygen (mg/l) (NTU) (ml/min) (ft bmp) (mS/cm) pH (SU) 1 Well Volume 23.02 8.98 21.3 264 0.61 800 2 Well Volume 23.09 9.63 19.8 284 1.24 800 3 Well Volume 23.09 9.64 19.0 287 1.30 800 Stabilization  $\Delta \leq 0.3$ ± 3%  $\pm 0.1$ ± 3% ± 10 mV ± 10% ± 10%  $100 \le X \le 500$ End Purge Time: Water sample: 2RND4\_ISCO-MW-2\_111315 Time collected: 1030 Total volume of purged water removed: 0.55 gal Physical appearance at start Physical appearance at sampling Color Yellowish/Brown Cloudy Yellowish/Brown Cloudy Color Odor None Odor None Sheen/Free Product None Sheen/Free Product None Analytical Parameters: Container Size Container Type # Collected Field Filtered Preservative Lab 40 ml Vial Ν **HCL** Accutest 500 ml Ρ 2 N/YNone Accutest Р HNO3 500 ml 1 Ν Accutest Notes: Well Volume = 0.18 gal Unable to pump due to recharge, bail 3 well volumes

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	DITILIA	DULINE		<b>LOW</b> 11	OW Crour	ila Water C	ampinig L	.09
Date:	11/12/2015	Person	nnel:	A. C	Carpenter	Weather:	Rain	
Site Name:	Evor Phillips	Pump/	Controller ID	D#: Monsoon /	# 14751	Well #:	ISCO-MV	V-3
Site Location:	Old Bridge, NJ	Sampl	ing Method:	Lo	w-Flow	Project #:	51308	
Monitoring Equ	ip. Used (include	: ID#): Horriba	a U-52 #	21053/14	1412	· 		
Well informati	on:		Well Diame	eter Multipliers		* Measuremen	nts taken from	
Depth of Well*:	<u></u>	29.80 ft.	2 in. = 0.1	-		Х	Top of Well Ca	ısing
Depth to Water	·*:	25.66 ft.	4 in. = 0.6	.53 gal/ft			Top of Protecti	ve Casing
Length of Wate		ft.	6 in. = 1.4	-			]	
Pump Intake D		24 ft.	8 in. = 2.6	11 gal/ft			(Other, Specify	)
Well Diameter:		<u>2</u> in.	<u></u>		<u></u>			
Start Purge Tin		14:04		indicate units				
Elapsed Time	Depth To Water (ft bmp)	Temperature (Celsius)	pH (SU)	Specific Conductivity (mS/cm)	ORP (mV)	Dissolved Oxygen (mg/l)	Turbidity (NTU)	Flow Rate (ml/min)
14:04	25.66	16.51		8.03	-40	0.82	0	450
14:09	25.87	i e			-46			400
14:14	25.91	16.63	12.17	8.77	-48	0.00	0	400
14:19	25.88	16.67	12.26	9.03	-47	0.00	974	400
14:24	25.90	16.63	12.28	8.95	-44	0.00	765	400
14:29	25.91	16.62	12.30	9.01	-41	0.00	661	400
14:34	26.00						1	400
14:39	26.02		t -		1		1	400
14:44	26.00		12.36		1		<del>                                     </del>	400
14:49	26.00		12.35		1		1	400
14:54	26.00		12.39					400
14:59	26.01	16.61	12.41	8.64	-32	0.00	746	400
	<del>                                     </del>	<u> </u> '	<b>  </b>	<b></b>	<u> </u>		$\vdash$	<del>                                     </del>
		<u> </u>	<del>  </del>		<u> </u>		<del>                                     </del>	
		<u> </u>	<del>                                     </del>	<u> </u>	<del>                                     </del>		<del>                                     </del>	
		<del> </del>			<u> </u>		<del>                                     </del>	
			<del>                                     </del>		<del>                                     </del>		<del>                                     </del>	
	<u> </u>	<del> </del>	<del>                                     </del>	<del> </del>	<del> </del>		<del>                                     </del>	
Stabilization	Δ ≤ 0.3'	± 3%	± 0.1	± 3%	± 10 mV	± 10%	± 10%	100 ≤ X ≤ 500
		•	<u></u>		<u></u>			
End Purge Tim  Water sample: Time collected:	2RND4_I	4:59 ISCO-MW-3_1112		Total volume of	puraed water i	removed:	6 gal	
	earance at start	•			-	earance at samp		
		Brown/tan/cloudy	_			Color	Clear/Tan	
	Odor Nor		-				None	ı
Sheen/Free Pro	oduct Nor	ne	<u></u>		Sheen/F	Free Product	None	
Analytical Para		<del>_</del>						
Container S	ize Cor	ntainer Type	# Collect	ed Field	d Filtered	Preservat	ive	Lab
40 ml 500 ml	$\overline{}$	Vial P	3	<del>                                     </del>	N N/Y	HCL None		Accutest Accutest
500 ml		P	1	<del>-  </del>	N	HNO3		Accutest
			<u> </u>					
			<u> </u>					
Notes:								
•								
]								
•	<del></del>			•			•	



	BRIEN	O GERE		LOW FI	low Grou	ind water S	ampling	Log
Date:	11/12/2015	Perso	nnel:	D. M	ongiardo	Weather:	Cloudy 40's	
Site Name:	Evor Phillips	— Pump	/Controller II	D#: Monsoon /	# 013735	 Well #:	ISCO-M\	N-4
Site Location:	Old Bridge, N	 IJ Samp	ling Method:	Lo	w-Flow	Project #:	51308	<del></del> 3
	uip. Used (inclu		a U-52 #	21074	-			<u> </u>
Well informat				eter Multipliers		* Measuremer	its taken from	
Depth of Well*		19.85 ft.	2 in. = 0.1	·		Х	Top of Well Ca	asing
Depth to Wate		19.14 ft.	4 in. = 0.6	•			Top of Protect	•
Length of Wat	er Column:	0.71 ft.	6 in. = 1.4	l69 gal/ft				-
Pump Intake D	Depth:	17 ft.	8 in. = 2.6	611 gal/ft			(Other, Specify	y)
Well Diameter	: <u> </u>	<u>2</u> in.						
Start Purge Ti	me:	0910		indicate units				
Elapsed Time	Depth To Water (ft bmp)	Temperature (Celsius)	pH (SU)	Specific Conductivity (mS/cm)	ORP (mV)	Dissolved Oxygen (mg/l)	Turbidity (NTU)	Flow Rate (ml/min)
0915	19.20	16.15	4.35	0.145	299	2.87	1000	150
0920	19.21	16.16	4.33	0.130	327	2.48	694	150
0925	19.22	16.28	4.32	0.126	335	2.57	436	150
0930	19.23	16.34	4.30	0.126	344	2.73	220	150
0935	19.23	16.63	4.29	0.125	338	3.14	147	150
0940	19.23	17.14	4.26	0.121	348	2.94	88.5	150
0945	19.24	17.27	4.25	0.120	351	3.07	60.5	150
0950	19.24	17.29	4.25	0.120	351	2.87	56.9	150
0955	19.24	17.03	4.26	0.118	353	2.00	33.2	150
1000	19.24	17.03	4.26	0.117	354	1.97	30.4	150
1005	19.24	17.08	4.24	0.119	355	2.04	42.7	150
1010	19.24	17.09	4.24	0.117	356	2.16	42.6	150
	1 10 2	1 20/				122/	400/	100 . 1/ . 500
Stabilization	Δ ≤ 0.3'	± 3%	± 0.1	± 3%	± 10 mV	± 10%	± 10%	100 ≤ X ≤ 500
Sheen/Free Pi	2RND4 1: 1015 earance at star Color C Odor N roduct N		215 - - -	Total volume of	Physical app	removed: pearance at sam Color Odor Free Product	2.5 gal  pling Clear None None	- - -
Analytical Par Container S		Container Type	# Collect	ted Field	d Filtered	Preservat	ive	Lab
40 ml		Vial	3	. 1310	N	HCL		Accutest
500 ml		Р	2	ı	N/Y	None		Accutest
500 ml		Р	1		N	HNO3		Accutest
						1		
Notes:	<u> </u>		1	1		1	1	

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	BITIEN	OGERE		Low Flow Ground Water Sampling Log					
Date:	11/13/2015	Persor	nnel:	nel: D. Mongiardo		Weather:	Clear 40's		
Site Name:	Evor Phillips	– Pump/	/Controller ID	r ID#: Monsoon / # 013735		Well #:	ISCO-M\	N-5	
Site Location:	Old Bridge, NJ	_ J Sampl	ling Method:	Lo	w-Flow	Project #:	51308	<del></del>	
	uip. Used (includ	_	a U-52 #	21074		_ ′			
Well informat		,	T	eter Multipliers		* Measuremen	nts taken from		
Depth of Well*		32.60 ft.	2 in. = 0.1	•		X	Top of Well Ca	asing	
Depth to Wate		23.2 ft.	4 in. = 0.6	•			Top of Protect	-	
Length of Wat		9.4 ft.	6 in. = 1.4	⊧69 gal/ft			1	· ·	
Pump Intake D	Depth:	27 ft.	8 in. = 2.6	i11 gal/ft			(Other, Specify	y)	
Well Diameter	: <u> </u>	<u>2</u> in.							
Start Purge Ti	me:	1045		indicate units					
Elapsed Time	Depth To Water (ft bmp)	Temperature (Celsius)	pH (SU)	Specific Conductivity (mS/cm)	ORP (mV)	Dissolved Oxygen (mg/l)	Turbidity (NTU)	Flow Rate (ml/min)	
1050	23.22	15.37	6.13	0.264	125	0.00	800	400	
1055	23.24	15.91	6.24	0.258	114	0.00	800	400	
1100	23.24	16.01	6.23	0.253	111	0.00	800	400	
1105	23.24	15.49	6.16	0.242	104	0.00	303	400	
1110	23.24	15.42	6.13	0.236	102	0.00	109	400	
1115	23.25	15.40	6.12	0.237	100	0.00	46.0	400	
1120	23.26	15.37	6.05	0.237	98	0.00	19.1	400	
1125	23.26	15.44	5.97	0.238	98	0.00	12.6	400	
1130	23.26	15.46	5.96	0.238	97	0.00	10.3	400	
1135	23.26	15.47	5.96	0.239	96	0.00	7.4	400	
							ļ		
			<u> </u>				<b></b>		
			<u> </u>				<b></b>		
		<u> </u>	<u> </u>						
Stabilization	Δ ≤ 0.3'	± 3%	± 0.1	± 3%	± 10 mV	± 10%	± 10%	100 ≤ X ≤ 500	
Sheen/Free Pi	2RND4_ 1: 1140  earance at start  Color Ye  Odor Noroduct No	I140 ISCO-MW-5_1113 — ellowish Cloudy one one	315 - - -	Total volume of	Physical app	removed: pearance at samp Color Odor Free Product	6 gal pling Clear None		
Analytical Par Container S		ontoiner Tune	T # Colloc	tod Field	I Filtored	Dragomyot	tivo	Lab	
40 ml	Size CC	ontainer Type Vial	# Collect	.ea Field	l Filtered N	Preservat HCL	.ive	Lab Accutest	
500 ml		P	2	1	N/Y	None		Accutest	
500 ml		Р	1		N	HNO3		Accutest	
Notes:									

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	DITILIA	OGLINE		20111	on orour	ia Water C	rampinig L	-09
Date:	11/13/2015	Persor	nnel:	A. C	A. Carpenter		Sunny 50	0's
Site Name:	Evor Phillips	Pump/	Controller ID	)#: Monsoon /	Monsoon / # 14751		ISCO-MV	V-6
Site Location:	Old Bridge, NJ	Sampl	ing Method:	Lo	w-Flow	Project #:	51308	
Monitoring Equ	uip. Used (include	e ID#): Horrib	a U-52 #	21053/1441	2			
Well informati		,	1	eter Multipliers		* Measuremer	nts taken from	
Depth of Well*	:	33.57 ft.	2 in. = 0.16	•		Х	Top of Well Ca	ısing
Depth to Water		23.60 ft.	4 in. = 0.65	-			Top of Protecti	-
Length of Wate	er Column:	ft.	6 in. = 1.46	69 gal/ft				
Pump Intake D		29 ft.	8 in. = 2.6°	11 gal/ft			(Other, Specify	<b>'</b> )
Well Diameter:	:	<u>2</u> in.	<u></u>		<u> </u>			
Start Purge Tir	ne:	11:40		indicate units				
Elapsed Time	Depth To Water (ft bmp)	Temperature (Celsius)	pH (SU)	Specific Conductivity (mS/cm)	ORP (mV)	Dissolved Oxygen (mg/l)	Turbidity (NTU)	Flow Rate (ml/min)
11:40		15.48	4.67	0.630	250	0.77	0	450
11:45	23.80	15.10	4.87	0.674	252	0.52	252	450
11:50	23.78	15.03	4.93	0.673	249	0.45	249	450
11:55	23.78	15.03	4.95	0.675	249	0.43	43.1	450
12:00	23.78	15.01	4.97	0.675	248	0.42	32.4	450
12:05	23.80	14.98	4.99	0.680	248	0.38	41.6	450
12:10	23.80	15.00	4.98	0.673	248	0.36	34.2	450
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							†	
							†	
Stabilization	Δ ≤ 0.3'	± 3%	± 0.1	± 3%	± 10 mV	± 10%	± 10%	100 ≤ X ≤ 500
End Purge Tim	ne: 1210							
Water sample Time collected	l: 1210	ISCO-MW-6_1113 -		Total volume of			~4 gal	
Physical appe	earance at start Color	Cloudy/orange-br	rown		Physical appe	earance at samp Color	pling Cloudy/orange-	brown
	Odor	None	OWII			Odor	None	-DIOWII
Sheen/Free Pr	-	None	_		Sheen/F	ree Product	None	
Analytical Par	ameters:							
Container S	Size Cor	ntainer Type	# Collecte	ed Field	d Filtered	Preservat	tive	Lab
40 ml		Vial	3		N	HCL		Accutest
500 ml		<u>Р</u> Р	2		N / Y N	None HNO3		Accutest Accutest
500 1111	<del></del>		<del>                                     </del>		IN	HINOS	·	Acculest
Notes:								



Date:	11/13/2015	Persor	Personnel: A. Carpenter			Weather:	Sunny 5	50's
Site Name:	Evor Phillips	Pump/	/Controller ID	D#: Monsoon /	# 14751	Well #:	ISCO-M\	W-7
Site Location:	Old Bridge, NJ	Sampl	ling Method:	Lo <sup>,</sup>	w-Flow	Project #:	51308	<del></del> 3
	uip. Used (include	•	a U-52 #21	-				
Well informati			1	eter Multipliers		* Measuremen	ts taken from	
Depth of Well*		22.60 ft.	2 in. = 0.163 gal/ft				Top of Well Ca	asing
Depth to Wate		20.69 ft.	4 in. = 0.65	•			Top of Protect	
Length of Wate		ft.	6 in. = 1.46	-				3
Pump Intake D	epth:	20 ft.	8 in. = 2.6°	11 gal/ft			(Other, Specify	y)
Well Diameter:	: <u> </u>	<u>2</u> in.						
Start Purge Tir	ne:	9:19		indicate units				
Elapsed	Depth To	Temperature		Specific	ORP	Dissolved	Turbidity	Flow Rate
Time	Water	(Celsius)	(01)	Conductivity	(mV)	Oxygen (mg/l)		(ml/min)
0.10	(ft bmp)	45.00	pH (SU)	(mS/cm)	404	0.04	4000	100
9:19		15.99	8.69	3.38			1000	400
9:24		16.20	7.19					400
9:29		16.53	6.89					350
9:34		16.59	6.76		168 165			350
9:39		16.92	6.73				1000	350
9:44	<del>                                     </del>	17.12	6.64	1.93			519	350
9:49	<del>                                     </del>	17.03	6.59	1.79				350
9:54	<del>                                     </del>	17.03	6.51	1.77				350
9:59	<del>                                     </del>	17.05	6.55					350
10:04	top of pump	17.10	6.52	1.95	158	1.95	443	350
			$\vdash$					<del>                                     </del>
			$\vdash$					<del>                                     </del>
			+					
			+ +					
			+ +					
			<del>                                     </del>		}			<del> </del>
			<del>                                     </del>					<del> </del>
Stabilization	Δ ≤ 0.3'	± 3%	± 0.1	± 3%	± 10 mV	± 10%	± 10%	100 ≤ X ≤ 500
	•	•	<u></u>					
End Purge Tim		10:04						
Water sample		SCO-MW-7_1113						
Time collected				Total volume of			~5 ga	<u>al</u>
Priysical appe	earance at start Color	Brownish/tan/clou	udv		Physical appe	earance at samp Color	Clear/tan	
	Odor	None	udy				None	-
Sheen/Free Pr		None	<u>-</u>		Sheen/F		None	_
Analytical Par	ameters:							
Container S		ntainer Type	# Collecte	ed Field	Filtered	Preservati	ive	Lab
40 ml		Vial	3		N	HCL		Accutest
500 ml		Р	2	1	N/Y	None		Accutest
500 ml		Р	1		N	HNO3		Accutest
	<del></del>						+	
Notes:								
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Date:	11/13/2015	Pers

Date:	11/13/2015	Persor	nnel:	A. C	A. Carpenter		Sunny	/
Site Name:	Evor Phillips	_ Pump/	/Controller ID	D#: Monsoon /	# 14751	Well #:	ISCO-MV	N-8
Site Location:	Old Bridge, NJ	Sampl	ling Method:	Lo	Low-Flow		51308	}
Monitoring Equ	uip. Used (include	∍ ID#):Horrib	a U-52 #	21053/14412	<u> </u>	·		
Well informati	ion:		Well Diame	eter Multipliers		* Measuremen	its taken from	
Depth of Well*:	:	26.52 ft.	2 in. = 0.16	·	1	Х	Top of Well Ca	asing
Depth to Water	r*:	24.44 ft.	4 in. = 0.653 gal/ft			Top of Protecti		
Length of Wate		ft.	6 in. = 1.46	•	1			
Pump Intake D		21 ft.	8 in. = 2.6	11 gal/ft	1		(Other, Specify	/)
Well Diameter:		<u>2</u> in.	<u></u>		<u></u>			
Start Purge Tin		7:38		indicate units				
Elapsed	Depth To Water	Temperature		Specific	ORP	Dissolved	Turbidity	Flow Rate
Time	(ft bmp)	(Celsius)	pH (SU)	Conductivity (mS/cm)	(mV)	Oxygen (mg/l)	(NTU)	(ml/min)
7:38	24.44	16.49	12.19		37	0.00	236	450
7:43	i	12.68	12.68				1	
7:48		16.85	12.66			<u> </u>		350
7:53	top of pump	16.92	12.67	34.4				
7:58	<del>                                     </del>	16.96	12.66				40	
8:03	top of pump	16.98	12.66				40	
8:08	top of pump	17.00	12.66	<del> </del>			<del> </del>	350
8:13		17.06	12.66	1			<del> </del>	
8:18		17.10	12.65	1			<del> </del>	
8:23	top of pump	17.10	12.65					
					<u> </u>			
		<u> </u>	<u> </u>		<u> </u>		<u> </u>	
		<u> </u>	<u> </u>		<u> </u>			
Stabilization	Δ ≤ 0.3'	± 3%	± 0.1	± 3%	± 10 mV	± 10%	± 10%	100 ≤ X ≤ 500
End Purge Tim	ıe:	8:23						
Water sample:		RND4_ISCO-MW-	-8 111315					
Time collected:				Total volume of	purged water r	emoved:	~ 5 gal	
Physical appe	earance at start					earance at samp		
		Brownish/Tan/Clo	oudy				Clear/Yellowish	ņ
		None	-			•	None	
Sheen/Free Pro	oduct	None			Sheen/F	ree Product	None	·
Analytical Para								
Container S	ize Con	ntainer Type	# Collecte	ed Field	d Filtered	Preservati	ive	Lab
40 ml	$\longrightarrow$	Vial P	3	<del></del>	N N / V	HCL		Accutest
500 ml	<del></del>	<u>Р</u>	1		N / Y N	None HNO3	-+	Accutest Accutest
000 1	$\overline{}$		· ·			111.00		Accuracy
				<del></del>				
Notes:								
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Date: 11/12/2015 Personnel: D. Mongiardo Weather: Cloudy 50's Site Name: Evor Phillips Pump/Controller ID#: Monsoon / # 013735 Well #: ISCO-MW-9 Site Location: Old Bridge, NJ Sampling Method: 51308 Low-Flow Project #:

Monitoring Equip. Used (include ID#): Horriba U-52 #\_\_\_\_\_21074\_

Well information:		Well Diameter Multipliers	* Measurements taken from		
Depth of Well*:	24.85 ft.	2 in. = 0.163 gal/ft	X	Top of Well Casing	
Depth to Water*:	22.96 ft.	4 in. = 0.653 gal/ft		Top of Protective Casing	
Length of Water Column:	1.89 ft.	6 in. = 1.469 gal/ft			
Pump Intake Depth:	22 ft.	8 in. = 2.611 gal/ft		(Other, Specify)	
Well Diameter:	2 in.			_	

Start Purge Time: 1145 indicate units

Elapsed Time	Depth To Water (ft bmp)	Temperature (Celsius)	pH (SU)	Specific Conductivity (mS/cm)	ORP (mV)	Dissolved Oxygen (mg/l)	Turbidity (NTU)	Flow Rate (ml/min)
1150	-	16.62	6.21	0.457	249	0.00	494	400
1155	-	16.46	6.37	0.579	257	0.00	494	400
1200	-	16.27	6.64	0.732	248	0.00	296	400
1205	-	16.23	6.56	0.626	247	0.00	195	400
1210	-	16.26	6.59	0.660	246	0.00	245	400
1215	-	16.29	6.60	0.676	245	0.00	302	400
1220	-	16.31	6.55	0.557	251	0.00	156	400
1225	-	17.07	6.69	0.527	227	0.91	800	150
			V	/ell stopped pum	ping			
1320	23.09	16.55	6.81	0.846	240	0.16	800	400
1325	23.09	16.93	6.88	0.904	239	0.11	800	400
1330	23.09	16.63	6.67	0.692	245	0.00	326	400
1335	23.11	16.00	6.73	0.710	246	0.00	324	400
1340	23.11	15.81	6.92	0.805	239	0.00	321	400
1345	23.11	15.78	6.90	0.783	238	0.00	331	400
Stabilization	Δ ≤ 0.3'	± 3%	± 0.1	± 3%	± 10 mV	± 10%	± 10%	100 ≤ X ≤ 500

End Purge Time: 1350

Water sample: 2RND4\_ISCO-MW-9\_111315

Time collected: 1350 Total volume of purged water removed: ~6.5 gal

Physical appearance at start

Physical appearance at sampling

Color Cloudy/Yellowish Orange

 Color
 Cloudy/Yellowish Orange
 Color
 Cloudy/Yellow

 Odor
 None
 Odor
 None

Sheen/Free Product None Sheen/Free Product None

**Analytical Parameters:** 

,					
Container Size	Container Type	# Collected	Field Filtered	Preservative	Lab
40 ml	Vial	3	N	HCL	Accutest
500 ml	Р	2	N/Y	None	Accutest
500 ml	Р	1	N	HNO3	Accutest

Notes: 1230 well stopped pumping, changed pump, no help

Battery was dead/ not sufficient repumping at 1315

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	Dillette	, 01111						9
Date:	11/12/2015	Person	nel: A. Carpenter		Weather:	Rain		
Site Name:	Evor Phillips	Pump/	Controller ID	D#: Monsoon /	# 14751	Well #:	IW1-BT-	-2
Site Location:	Old Bridge, NJ	Sampli	ing Method:	Lo	w-Flow	Project #:	Project #: 51308	
Monitoring Equ	uip. Used (include		a U-52 #	21053/14	412	•		
Well informati	<u> </u>	,	Well Diame	eter Multipliers		* Measuremen	its taken from	
Depth of Well*		36.60 ft.	2 in. = 0.1	-		Х	Top of Well Ca	ısing
Depth to Wate	r*:	26.6 ft.	4 in. = 0.6	53 gal/ft			Top of Protective	=
Length of Wate	er Column:	ft.	6 in. = 1.4	·			ļ	
Pump Intake D	· —	<u>26</u> ft.	8 in. = 2.6	11 gal/ft			(Other, Specify	')
Well Diameter:		<u>2</u> in.						
Start Purge Tir	•	11:24		indicate units				
Elapsed	Depth To Water	Temperature		Specific Conductivity	ORP	Dissolved	Turbidity	Flow Rate
Time	(ft bmp)	(Celsius)	pH (SU)	(mS/cm)	(mV)	Oxygen (mg/l)	(NTU)	(ml/min)
11:24		15.79	12.58	21.2	-304	0.80	0	450
11:29	26.68	15.38	11.92	6.78	-177	0.84	0	450
11:34	26.69	15.35	11.75	5.76	-255	0.85	0	450
11:39	26.70	15.31	11.08	3.93	-218	0.87	698	450
11:44	26.71	15.32	10.80	3.56	-203	0.83	575	450
11:49	1	15.34	10.54	3.24	-189	0.81	399	450
11:54	1	15.35	10.42	3.09	-181	1.34		450
11:59	1	15.28	10.13	2.79	-165	0.98	1	450
12:04	1	15.25	10.04	2.62	-14	1.03	t	450
12:09	<del> </del>	15.24	9.72	2.39	2	1.01	120	450
12:14	26.70	15.25	9.72	2.40	3	1.00	111	450
Stabilization	Δ ≤ 0.3'	± 3%	± 0.1	± 3%	± 10 mV	± 10%	± 10%	100 ≤ X ≤ 500
End Purge Tim	ne: 12:	:14						
Water sample		N1-BT-2_111215						
Time collected				Total volume of	purged water re	emoved:	~6 gal	
Physical appe	earance at start				Physical appe	earance at samp	oling	
		Brown/Cloudy				Color	Brown/Clear	
Ch / D	Odor Non				Ch / -	Odor	None	
Sheen/Free Pr	roduct Non	.e			Sneen/F	ree Product	None	
Analytical Par		tain an T.	# Callage	ad Field	Citona d	Dwaganyat	÷	- Lab
Container S 40 ml	size Con	tainer Type Vial	# Collect	ed Fleid	Filtered N	Preservat HCL	ive	Lab Accutest
500 ml		P	2	1	N/Y	None		Accutest
500 ml		Р	1		N	HNO3		Accutest
Notes:								
Notes.								

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Date:	11/12/2015	Person	nel:	A. Carpenter		Weather:	Cloudy 5	0's
Site Name:	Evor Phillips	Pump/	Controller ID	D#: Monsoon /	# 14751	Well #:	IW1-DR	-1
Site Location:	Old Bridge, NJ	Sampli	ng Method:	Lov	w-Flow	Project #:	51308	
Monitoring Equ	uip. Used (include	ID#): Horriba	a U-52 #	21053/14	412			
Well informati		,		eter Multipliers		* Measuremen	its taken from	
Depth of Well*:	:	36.11 ft.	2 in. = 0.1	·		Х	Top of Well Ca	sing
Depth to Water		27.67 ft.	4 in. = 0.6	-			Top of Protective	-
Length of Wate	er Column:	8.44 ft.	6 in. = 1.4	69 gal/ft				
Pump Intake D	epth:	27 ft.	8 in. = 2.6	11 gal/ft			(Other, Specify	<b>'</b> )
Well Diameter:	<u> </u>	<u>2</u> in.						
Start Purge Tin	ne:	9:30		indicate units				
Elapsed Time	Depth To Water (ft bmp)	Temperature (Celsius)	pH (SU)	Specific Conductivity (mS/cm)	ORP (mV)	Dissolved Oxygen (mg/l)	Turbidity (NTU)	Flow Rate (ml/min)
9:30		15.19	6.98	0.449	-112	0.00	465	400
9:35	27.75	15.72	6.15	0.414	-49	0.00	460	400
9:40	27.76	15.86	6.02	0.358	-40	0.00	420	400
9:45	27.76	15.86	5.90	0.359	-40	0.00	249	400
9:50	27.76	15.76	5.97	0.359	-45	0.00	95.1	400
9:55	27.76	15.75	5.95	0.359	-46	0.00	117	400
10:00	27.75	16.01	5.96	0.361	-48	0.00	198	400
10:05	27.75	15.90	5.96	0.356	-49	0.00	79.7	400
10:10	27.75	15.83	5.93	0.355	-48	0.00	77.9	400
							-	
							1	
Stabilization	Δ ≤ 0.3'	± 3%	± 0.1	± 3%	± 10 mV	± 10%	± 10%	100 ≤ X ≤ 500
End Purge Tim	ne: 10	:10						
Water sample	-	 W1-DR-1_111215	;					
Time collected				Total volume of	purged water re	emoved:	~4.5 ga	al
Physical appe	earance at start				Physical appe	earance at samp	pling	
	Color	Black				Color	Clear	
Sheen/Free Pr	Odor Non		ı		Chaan/E	Odor ree Product	None	
		ie			Sneen/F	ree Product	None	
Analytical Par Container S		atoiner Type	# Collect	end I Field	I Filtered	Preservat	in co	Lab
40 ml	size Con	ntainer Type Vial	# Collect	ed Fleid	N	HCL	ive	Accutest
500 ml		P	2	1	N / Y	None		Accutest
500 ml		Р	1		N	HNO3		Accutest
Notes:								
Notes.								



11/13/2015 Personnel: K.Teitsma Weather: Sunny 50's Date: Site Name: Evor Phillips Pump/Controller ID#: Monsoon / # 030729 Well #: PZ-1S Site Location: Old Bridge, NJ Sampling Method: Low-Flow Project #: 51308 Monitoring Equip. Used (include ID#): Horriba U-52 # 21284/21780 Well information: Well Diameter Multipliers \* Measurements taken from Depth of Well\*: 32.02 ft. 2 in. = 0.163 gal/ftTop of Well Casing 19.87 ft. Depth to Water\*: 4 in. = 0.653 gal/ftTop of Protective Casing Length of Water Column: 6 in. = 1.469 gal/ft ft. Pump Intake Depth: 24 ft. 8 in. = 2.611 gal/ft (Other, Specify) Well Diameter: 2 in. Start Purge Time: 0845 indicate units Depth To Specific **Elapsed Temperature** ORP Dissolved **Turbidity** Flow Rate Water Conductivity Time (Celsius) (mV) Oxygen (mg/l) (NTU) (ml/min) (mS/cm) (ft bmp) pH (SU) 0850 19.81 15.31 6.10 0.298 301 0.00 0.0 250 0855 19.86 15.55 6.15 0.302 0.00 1000 250 291 0900 19.86 15.36 6.14 0.299 285 0.00 619 250 0905 19.86 15.59 6.15 0.303 280 0.00 493 250 0910 19.86 15.61 6.15 0.301 329 0.00 328 250 0915 19.86 15.54 6.15 0.300 0.00 253 250 267 0920 19.86 15.58 6.15 0.301 264 0.00 232 250 0925 19.86 15.61 6.15 0.302 259 0.00 171 250 0930 19.86 15.52 6.15 0.301 257 0.00 129 250 0935 19.86 15.53 6.14 0.303 254 0.00 105 250 0940 19.86 15.54 6.14 0.303 252 0.00 77.0 250 6.14 250 0.00 64.5 250 0945 19.86 15.49 0.301 0950 19.86 15.58 6.14 0.302 248 0.00 53.3 250 0.00 44.5 0955 19.86 15.57 6.14 0.301 246 250 6.14 0.00 41.5 1000 19.86 15.50 0.300 245 250 6.14 0.300 244 0.00 32.0 250 1005 19.86 15.53 1010 19.86 15.39 6.14 0.298 243 0.00 27.4 250 Stabilization  $\Delta \leq 0.3$ ± 3%  $\pm 0.1$ ± 3% ± 10 mV ± 10% ± 10%  $100 \le X \le 500$ End Purge Time: 1015 2RND4\_PZ-1S\_111315 Water sample: Time collected: 1015 Total volume of purged water removed: ~6 gal Physical appearance at start Physical appearance at sampling Color Yellowish/Cloudy Clear Color Odor None Odor None Sheen/Free Product None Sheen/Free Product None Analytical Parameters: Container Size Container Type # Collected Field Filtered Preservative Lab 40 ml Vial Ν HCL Accutest 500 ml Ρ 2 N/YNone Accutest Р 500 ml 1 Ν HNO3 Accutest Notes:

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	BRIEN	OGERE		LOW FI	ow Grou	ind water S	ampling i	Log
Date:	Date:11/13/2015 Personr		nnel:	nel: D. Mongiardo		Weather:	Sunny 40's	
Site Name:	Evor Phillips	– Pump	/Controller ID	D#: Monsoon /	# 013735	Well #:	II #: MW-5I	
Site Location:	Old Bridge, N.	 J Samp	ling Method:	Lo	w-Flow	Project #:	51308	<del></del>
	uip. Used (includ		a U-52 #	21074		_		<del></del>
Well informat				eter Multipliers		* Measuremen	nts taken from	
Depth of Well*		43.57 ft.	2 in. = 0.1	·		X	Top of Well Ca	asina
Depth to Wate		24.94 ft.	4 in. = 0.6	•			Top of Protecti	-
Length of Wat		18.63 ft.	6 in. = 1.4	•			1	g
Pump Intake [		32 ft.	8 in. = 2.6	•			(Other, Specify	y)
Well Diameter	: _	4 in.					•	
Start Purge Ti	me:	0910		indicate units				
Elapsed Time	Depth To Water (ft bmp)	Temperature (Celsius)	pH (SU)	Specific Conductivity (mS/cm)	ORP (mV)	Dissolved Oxygen (mg/l)	Turbidity (NTU)	Flow Rate (ml/min)
0915	25.93	14.82	7.44	0.316	127	0.00	20.7	400
0920	25.91	15.09	7.16	0.302	79	0.00	20.5	400
0925	25.92	14.90	7.02	0.288	22	0.00	20.0	400
0930	25.92	14.61	6.85	0.279	-6	0.00	18.6	400
0935	26.25	14.63	6.63	0.266	53	0.00	14.5	400
0940	26.32	14.69	6.58	0.264	99	0.00	13.1	400
0945	26.28	14.88	6.45	0.256	181	0.00	9.6	400
0950	26.14	15.20	6.41	0.252	186	0.00	8.5	400
0955	26.11	15.03	6.37	0.251	191	0.00	7.8	400
1000	26.11	15.11	6.39	0.248	195	0.00	7.2	400
1005	26.08	15.22	6.41	0.247	196	0.00	6.9	400
Stabilization	Δ ≤ 0.3'	± 3%	± 0.1	± 3%	± 10 mV	± 10%	± 10%	100 ≤ X ≤ 500
End Purge Tin Water sample Time collected	2RND4	1005 _MW-5I_111315		Total volume of	. 0	removed:	_<6.5 gal	
i ilysicai appe		lear			i ilysical app	Color	Clear	
		one	-			Odor	None	•
Sheen/Free P	roduct N	one	- -		Sheen/	Free Product	None	•
Analytical Par	rameters:							
Container :	Size Co	ontainer Type	# Collect	ted Field	d Filtered	Preservat	live	Lab
40 ml		Vial	3		N	HCL		Accutest
500 ml 500 ml		<u>Р</u> Р	1	<u>_</u>	N / Y N	None HNO3	,	Accutest Accutest
500 1111		<u> </u>	!		IN	HNOS		Acculest
Notes:	•					_		

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Date:	11/12/2015	Person	nnel:	K.Teitsma		_ Weather:	r: Overcast 50's  MW-10S	
Site Name:	Evor Phillips	Pump	/Controller ID	D#: Monsoon /	0#: Monsoon / # 029687			
Site Location:	Old Bridge, N	 J Sampl	ling Method:	Lov	w-Flow	Project #:	51308	8
	uip. Used (includ	_	a U-52 #	-	34/21780	_ '		
Well informat		,	Well Diame	eter Multipliers		* Measuremer	nts taken from	
Depth of Well*		31.30 ft.	2 in. = 0.1	·		X	Top of Well Ca	asing
Depth to Wate	_	20.70 ft.	4 in. = 0.6	-			Top of Protect	-
Length of Wat		ft.	6 in. = 1.4	-			1	g
Pump Intake D	_	23 ft.	8 in. = 2.6	-			(Other, Specif	y)
Well Diameter	: <u> </u>	<u>4</u> in.					<del>-</del>	
Start Purge Tir	me:	1410		indicate units				
Elapsed Time	Depth To Water (ft bmp)	Temperature (Celsius)	pH (SU)	Specific Conductivity (mS/cm)	ORP (mV)	Dissolved Oxygen (mg/l)	Turbidity (NTU)	Flow Rate (ml/min)
1415	20.70	15.50	5.73	0.668	249	2.90	11.3	250
1420	20.70	15.66	5.74	0.664	251	1.62	11.2	250
1425	20.70	15.73	5.74	0.659	251	0.43	10.5	250
1430	20.70	15.72	5.76	0.653	250	0.00	8.0	250
1435	20.70	15.73	5.77	0.650	251	0.00	6.7	250
1440	20.70	15.82	5.78	0.645	252	0.00	6.4	250
1445	20.70	15.72	5.77	0.634	252	0.00	5.3	250
Stabilization  End Purge Tim  Water sample Time collected Physical appe	2RND4 1. 1450 earance at start Color C Odor N	± 3%  1450 _MW-10S_111215 _t lear one one	± 0.1	± 3%	Physical app	± 10%  removed:  pearance at sam  Color Odor  Free Product	± 10%  ~ 2.5 gal  pling Clear None None	100 ≤ X ≤ 50
Analytical Par		one	_		Sneen/	Free Product	None	<u>-</u>
Container S		ontainer Type	# Collect	ted Field	l Filtered	Preserva	tive	Lab
40 ml		Vial	6		N	HCL		Accutest
500 ml		Р	4	1	N/Y	None		Accutest
500 ml		Р	2		N	HNO3		Accutest
Notes:	DLIP collec	ted : 2RND4_DUP	111215					
. 10.00			_111210					

Б	O'BRIEN	8 GERE
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Date:	11/13/2015	Persor	nnel: K.Teitsma		Weather:	Sunny 50's		
Site Name:	Evor Phillips	- Pump/	Controller ID	-		— Well #:	MW-11I	
	Old Bridge, NJ	•	ing Method:		w-Flow	Project #:	51308	
		•	_	•	84/21780		31300	
	ip. Used (include	e ID#). HOITIDA	a U-52 #		04/21/00	* N.A		
Well informati		44.00 #		eter Multipliers		* Measuremer	1	:
Depth of Well*: Depth to Water		44.00 ft. 23.44 ft.	2 in. = 0.1 4 in. = 0.6	-		Х	Top of Well Ca Top of Protect	=
Length of Water		23.44 II. ft.	6 in. = 1.4	-			Top of Protect	ive Casing
Pump Intake D		30 ft.	8 in. = 2.6	-			Other, Specify	v)
Well Diameter:		4 in.		3			](	,,
Start Purge Tin	ne:	0740	I .	indicate units				
Elapsed Time	Depth To Water	Temperature (Celsius)		Specific Conductivity	ORP (mV)	Dissolved Oxygen (mg/l)	Turbidity (NTU)	Flow Rate (ml/min)
0=4=	(ft bmp)		pH (SU)	(mS/cm)		1		
0745	23.58	14.16	5.23	0.212	354	5.23	52.0	250
0750	23.58	14.10	4.77	0.211	382	4.50	52.8	300
0755 0800	23.58 23.54	14.28 14.16	4.71 4.68	0.211 0.211	389 396	0.00	46.7 43.6	300 300
0805	23.54	14.16	4.67	0.211	403	0.00	36.0	300
0810	23.54	14.13	4.66	0.211	406	0.00	30.9	300
0815	23.54	14.15	4.66	0.209	408	0.00	29.1	300
0010	20.04	14.10	4.00	0.200	400	0.00	20.1	000
Stabilization	Δ ≤ 0.3'	± 3%	± 0.1	± 3%	± 10 mV	± 10%	± 10%	100 ≤ X ≤ 500
End Purge Tim	ie: 08	320						
Water sample	: 2RND4	MW-11I_111315						
Time collected	: 0820	_		Total volume of	purged water	removed:	~3 gal	
	arance at start				Physical app	pearance at sam		
	Color Cle		-			Color	Clear	-
Sheen/Free Pr	Odor <u>No</u> oduct No		-		Choon/	Odor Free Product	None None	-
		116	•		Sileeii/		None	<u> </u>
Analytical Par		- 1 - ' T	I # O - II 1		1 E'lt 1	D		Lab
Container S 40 ml	oize Col	ntainer Type Vial	# Collect	ea Field	d Filtered N	Preserva: HCL	live	Lab Accutest
500 ml		P	2		N/Y	None		Accutest
500 ml		Р	1		N	HNO3		Accutest
Notoo:								
Notes:								

<b>O'BRIEN</b>	8	GERE
OBINIEN		

Date: 11/12/2015 Person		nnel:	K.T	K.Teitsma		L. Rain/Overcast 50's MW-14SS		
Site Name: Evor Phillips Pump/ Site Location: Old Bridge, NJ Sampl		Controller ID	D#: Monsoon /	Monsoon / # 029687				
		ing Method:		w-Flow	Well #: Project #:	51308		
		_		84/21780		31300		
		ID#). HOITIDA	a U-52 #		04/21/00	* N.A		
Well informati		47.05.4		eter Multipliers		* Measuremer	7	:
Depth of Well*		17.05 ft. 7.25 ft.	2 in. = 0.1 4 in. = 0.6	-		Х	Top of Well Ca	=
Depth to Water*:		7.25 II.	6 in. = 1.4	-			Top of Protect	ive Casing
Length of Water Column:  Pump Intake Depth:		8 ft.	8 in. = 2.6	-			(Other, Specify	v)
Well Diameter:	· ·	4 in.		3			1(, -, -, -, -,	,,
Start Purge Tir	ne:	1205	1	indicate units	1			
Elapsed Time	Depth To Water (ft bmp)	Temperature (Celsius)	pH (SU)	Specific Conductivity (mS/cm)	ORP (mV)	Dissolved Oxygen (mg/l)	Turbidity (NTU)	Flow Rate (ml/min)
1210	7.29	15.09	6.10	0.371	235	1.13	30.7	250
1215	7.29	15.15	5.89	0.373	246	0.92	35.6	250
1220	7.29	15.17	5.86	0.371	251	0.85	32.1	250
1225	7.29	15.17	5.83	0.366	257	0.80	27.8	250
1230	7.29	15.21	5.80	0.363	261	0.98	26.2	250
1235	7.29	15.12	5.79	0.356	266	1.02	20.8	250
1240	7.29	15.09	5.78	0.350	270	1.11	18.3	250
Stabilization	Δ ≤ 0.3'	± 3%	± 0.1	± 3%	± 10 mV	± 10%	± 10%	100 ≤ X ≤ 500
End Purge Tim	12	45						
•			=					
Water sample Time collected	_	/W-14SS_11121	0	Total volume of	nurged water	removed:	~ 2.5 gal	
Physical appearance at start			Total Volume of	pling				
Color Clear		ar	_			Color Clear		_
Odor No		ne	•			Odor	None	_
Sheen/Free Product No		ne	_ She		Sheen/	Free Product	None	-
Analytical Par								
Container S	Size Cor	Container Type		ed Field	Field Filtered		tive	Lab
40 ml		Vial		<u> </u>	N N / V	HCL None		Accutest
500 ml 500 ml			2	<u> </u>	N/Y N			Accutest Accutest
300 1111		•	'		. 1	HNO3		, toodtoot
Notes:								



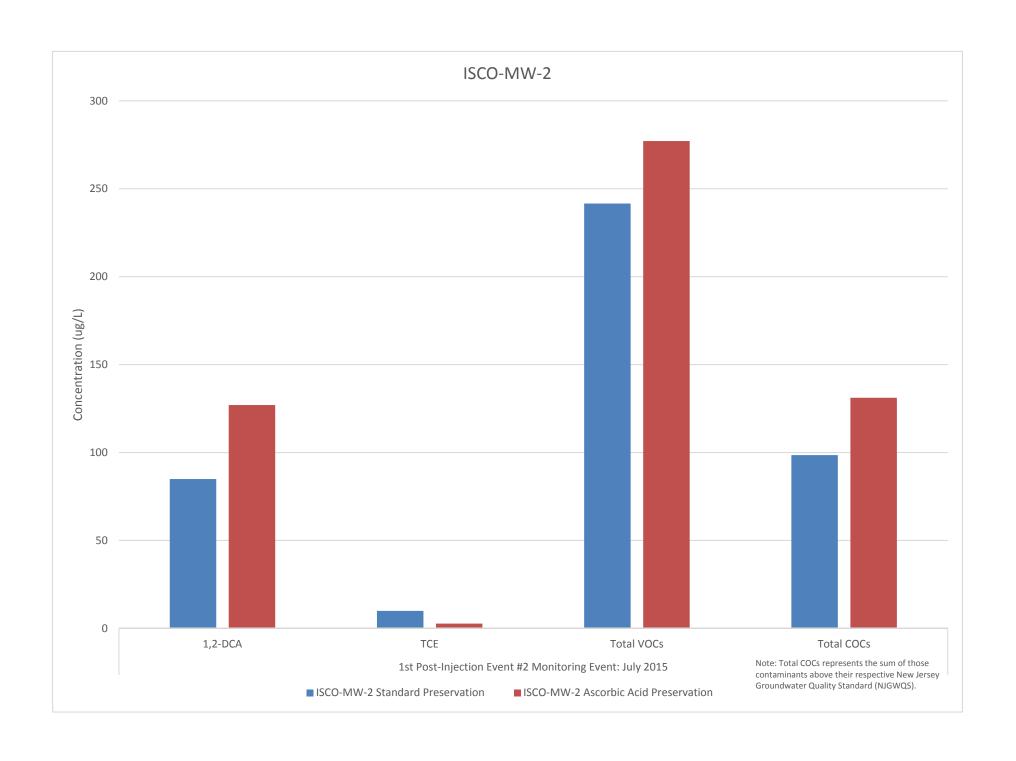
Date:	ate: <u>11/12/2015</u> Persor		nnel:	K.T	K.Teitsma		Overcast 50's	
		Controller ID	#: Monsoon /	Monsoon / # 029687		MW-14SD		
<del></del>		ing Method:	Lo	Low-Flow		51308	51308	
,	·		a U-52 #	٠	84/21780	Project #:		
Well informati		1511).			I	* Measuremer	nts taken from	
Depth of Well*: 17.05 ft.		Well Diameter Multipliers 2 in. = 0.163 gal/ft			X Top of Well Casing		asing	
Depth to Water*:		7.29 ft.	4 in. = 0.65	•			Top of Protect	=
Length of Water Column:		ft.	6 in. = 1.46	•			1	Ū
Pump Intake Depth:		13 ft.	8 in. = 2.61	l1 gal/ft		(Other, Specify)		
Well Diameter:		<u>4</u> in.						
Start Purge Tin	ne:	1250		indicate units				
Elapsed Time	Depth To Water (ft bmp)	Temperature (Celsius)	pH (SU)	Specific Conductivity (mS/cm)	ORP (mV)	Dissolved Oxygen (mg/l)	Turbidity (NTU)	Flow Rate (ml/min)
1255	7.29	14.76	5.89	0.373	253	0.00	22.7	250
1300	7.29	14.76	5.92	0.359	223	0.00	22.6	250
1305	7.29	14.78	5.83	0.334	226	0.17	22.6	250
1310	7.29	14.86	5.83	0.331	233	0.76	19.7	250
1315	7.29	14.89	5.81	0.327	238	1.13	17.7	250
1320	7.29	14.72	5.80	0.328	240	1.35	15.4	250
1325	7.29	14.75	5.80	0.330	243	1.47	13.4	250
1330	7.29	15.00	5.80	0.332	243	1.51	12.6	250
						1		
Stabilization	Δ ≤ 0.3'	± 3%	± 0.1	± 3%	± 10 mV	± 10%	± 10%	100 ≤ X ≤ 500
End Purge Tim	e: 13	35						
Water sample			E: ODNIDA M	W 148D 11101	E MC: ODNID	4_MW-14SD_111	21E MCD	
Time collected:		100-143D_11121		Total volume of			~ 3 gal	
	arance at start				-	earance at sam		
Color         Clear           Odor         None           Sheen/Free Product         None		Color Clear					_	
			•			Odor	None	_
		ie			Sheen/Free Product		None	
Analytical Para								
Container S	Size Con	Container Type Vial P		ed Field	Field Filtered  N N / Y		tive	Lab
40 ml				-				Accutest Accutest
500 ml		P		-	N N			Accutest
			3			HNO3		
			1					
Notes:		/MSD collected						

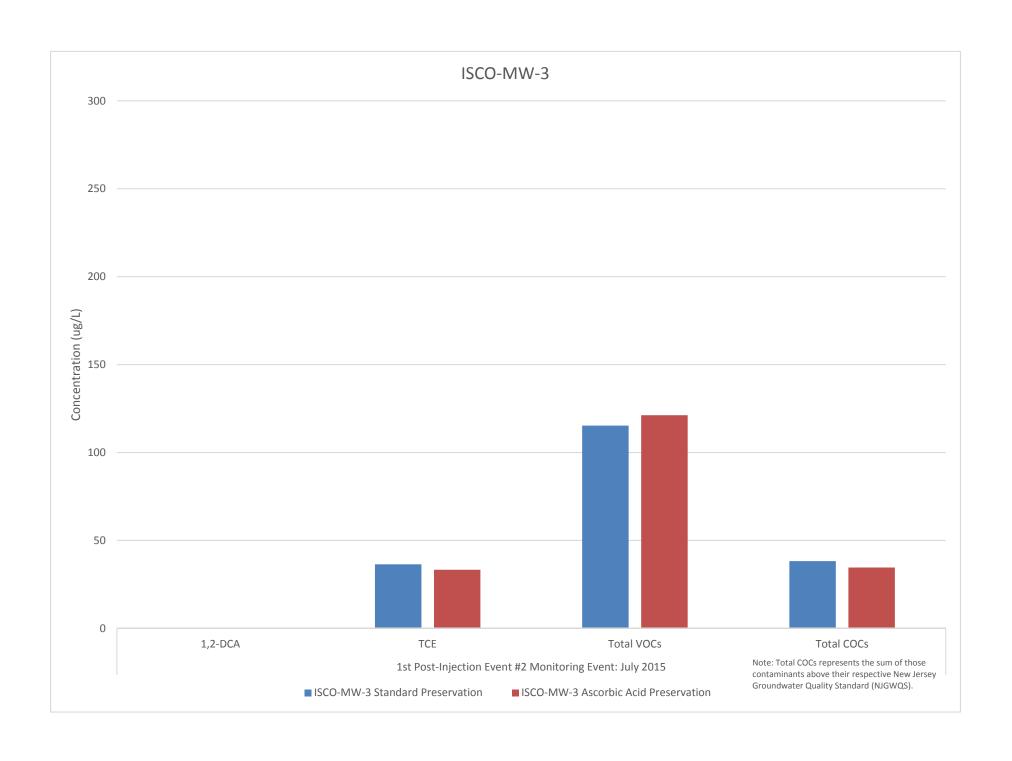
Attachment 4

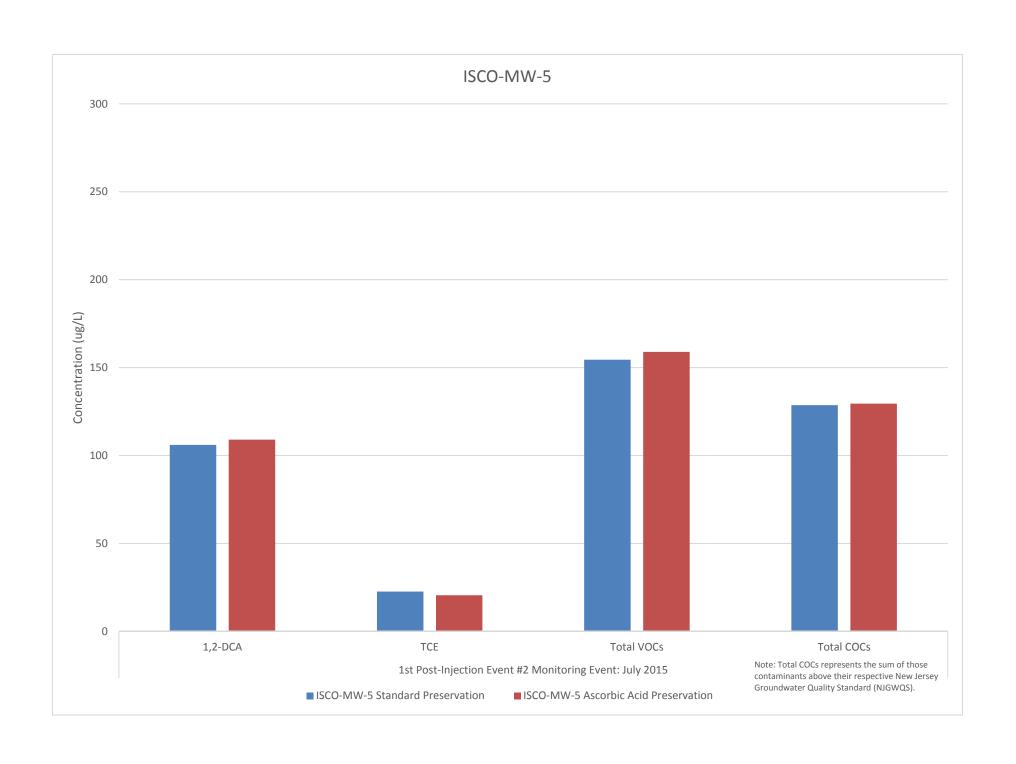
Ascorbic Acid

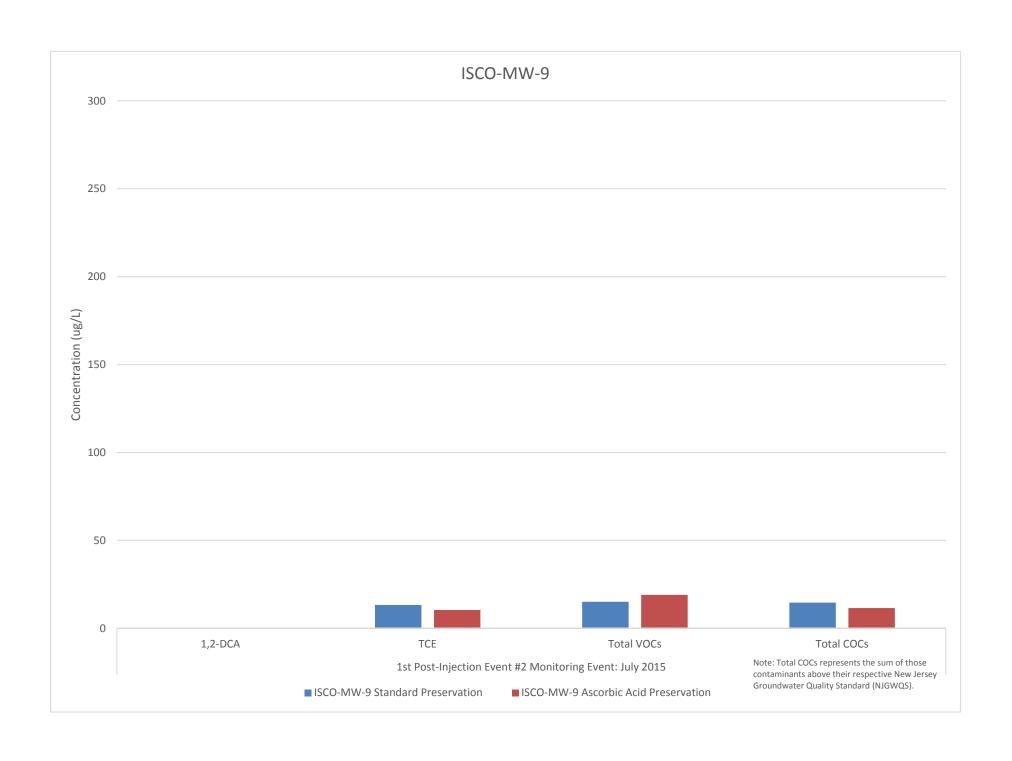
Preservation Comparison

Graphs

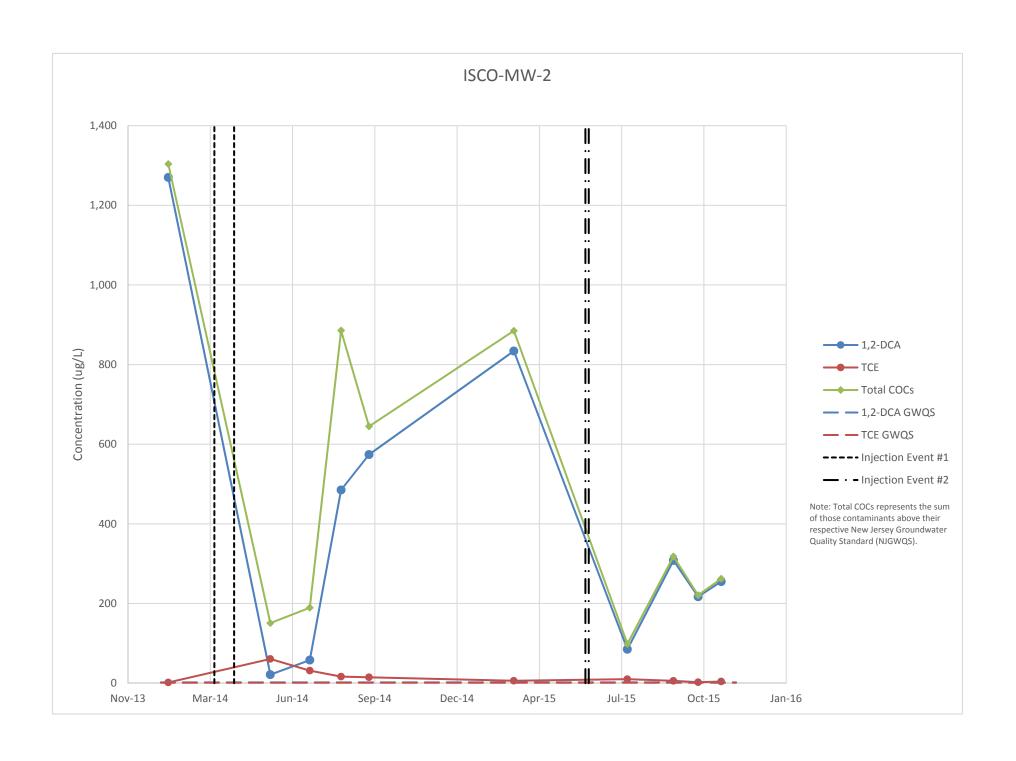


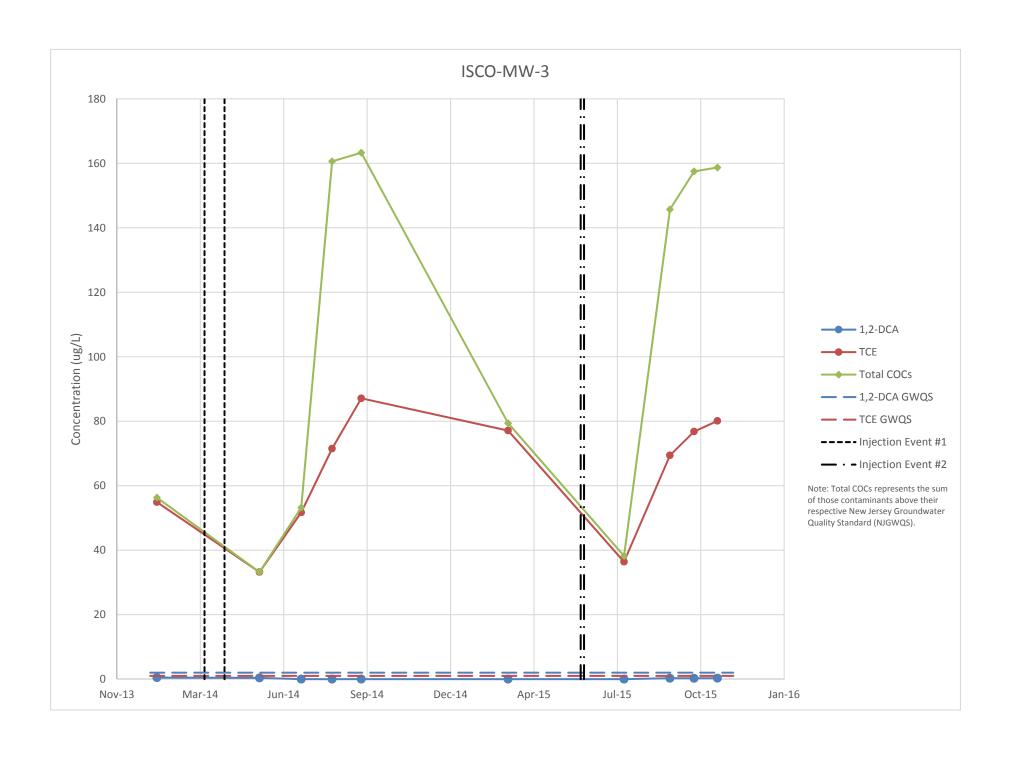


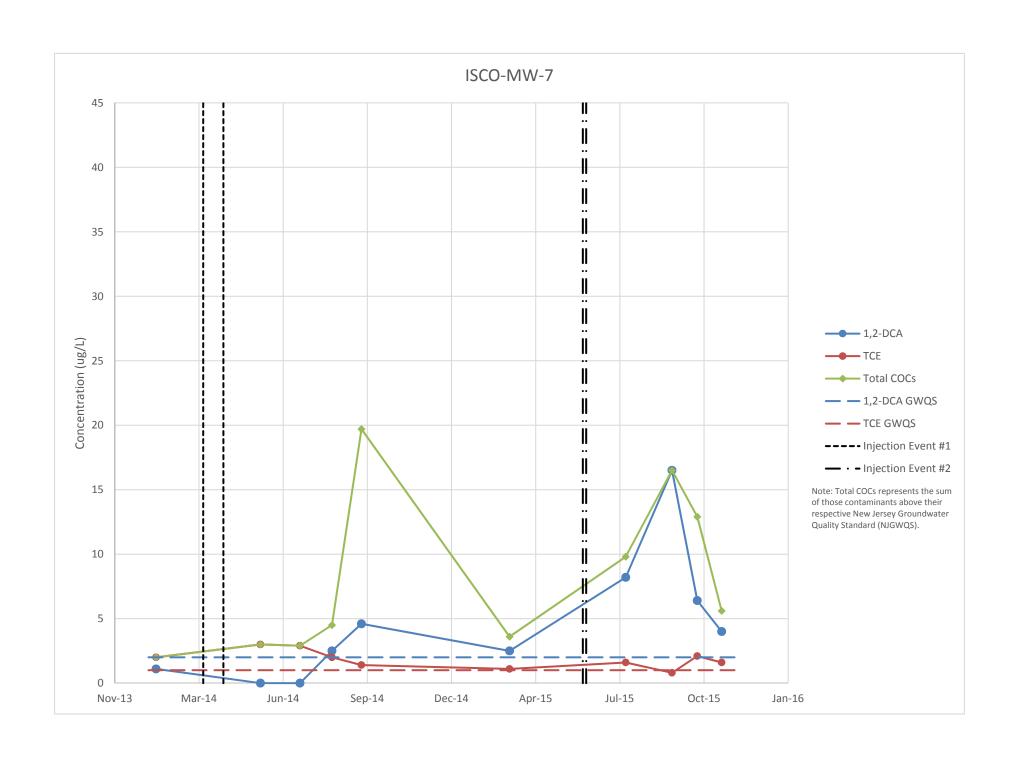


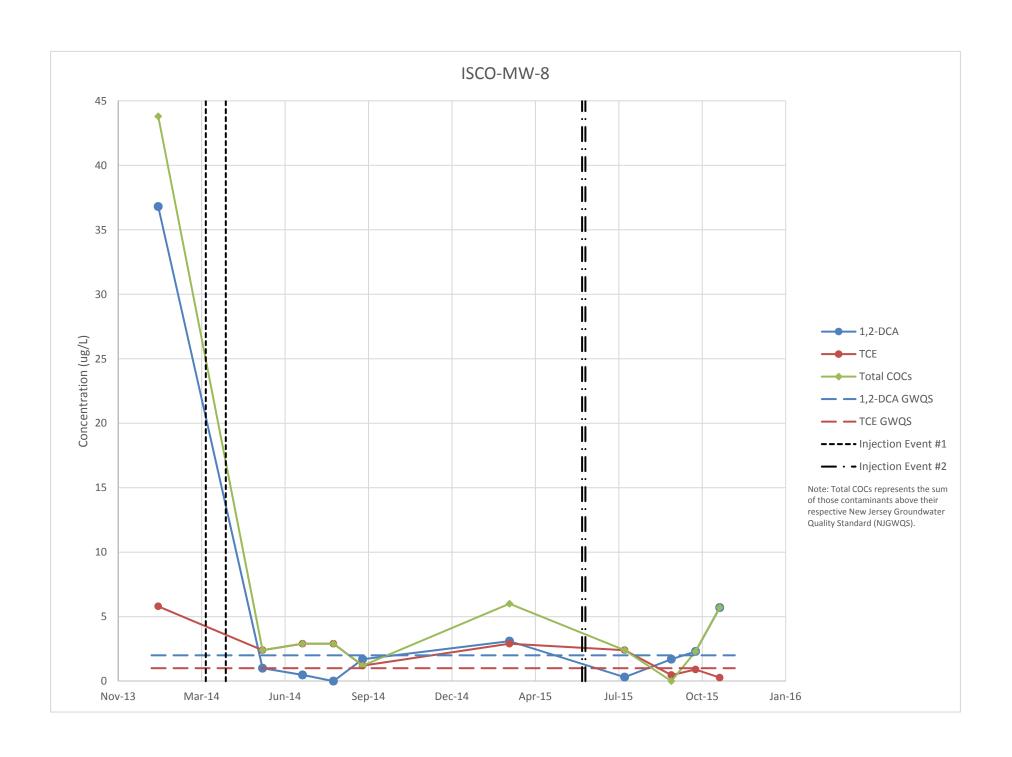


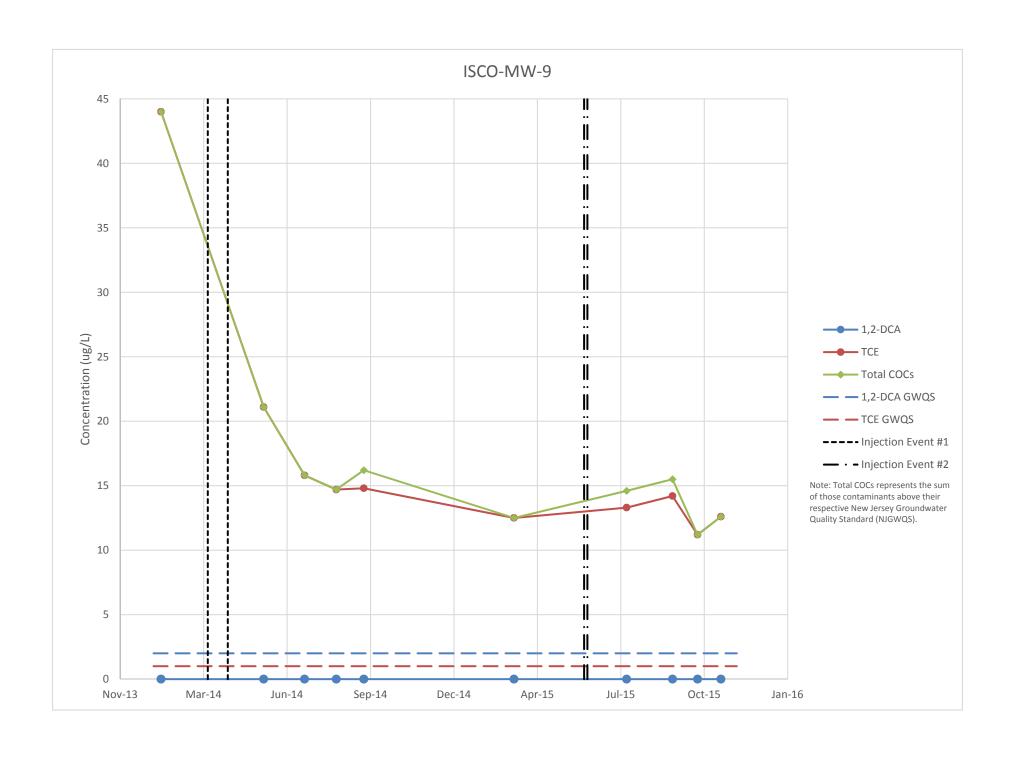
# Attachment 5 Groundwater Results Trend Graphs

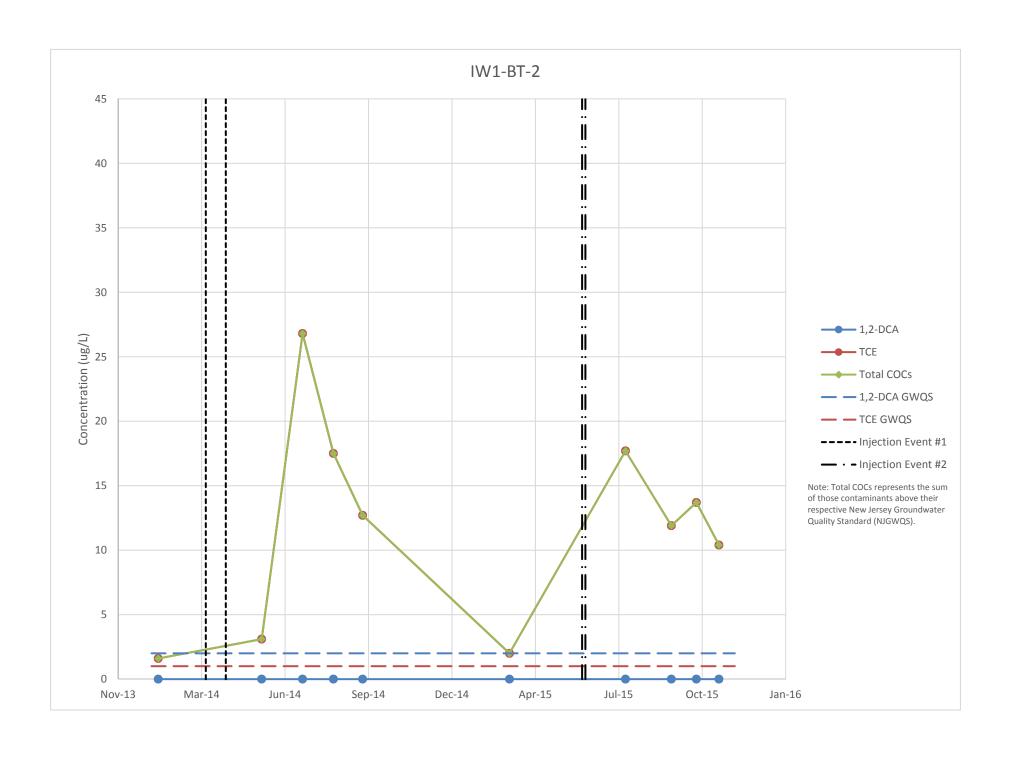


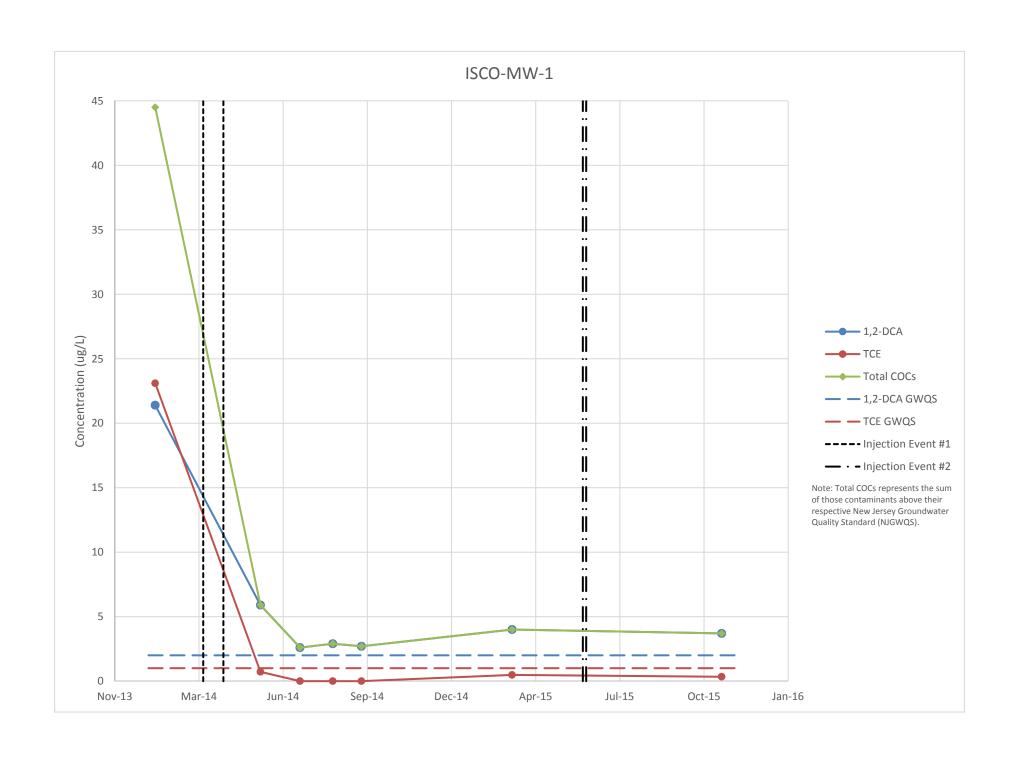


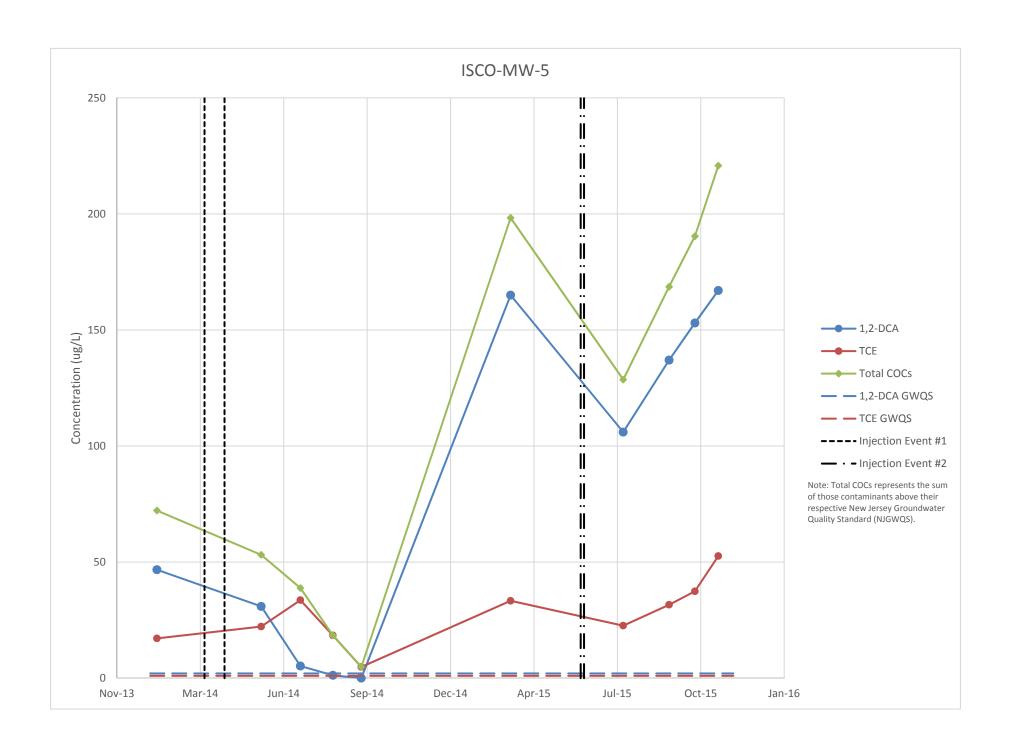


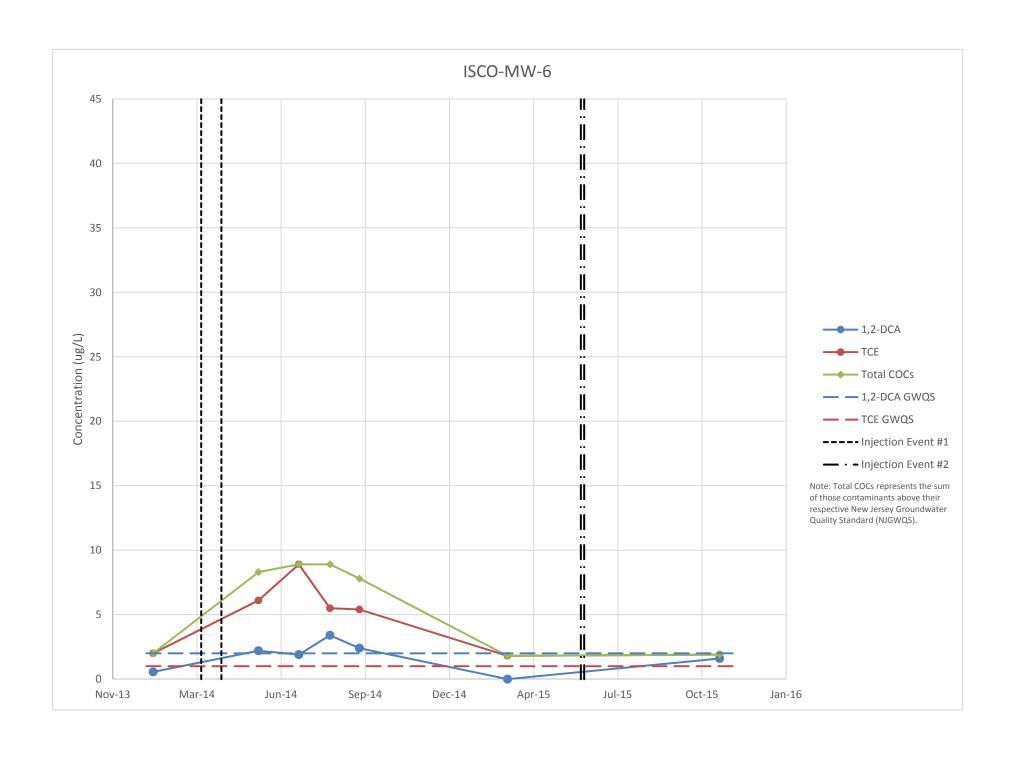


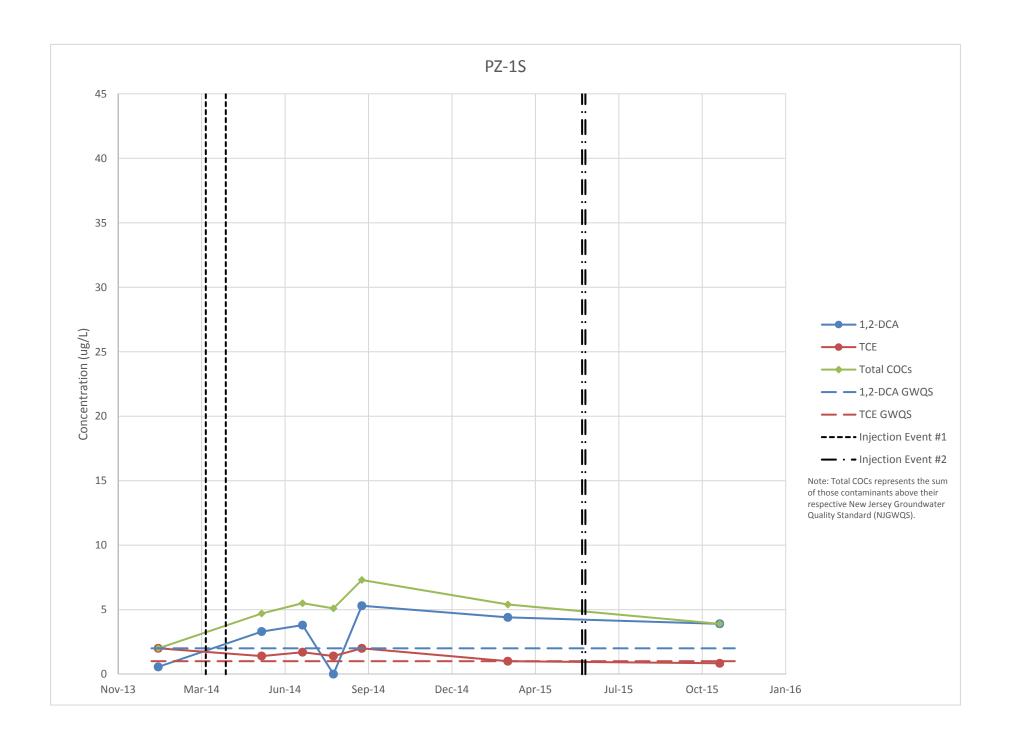


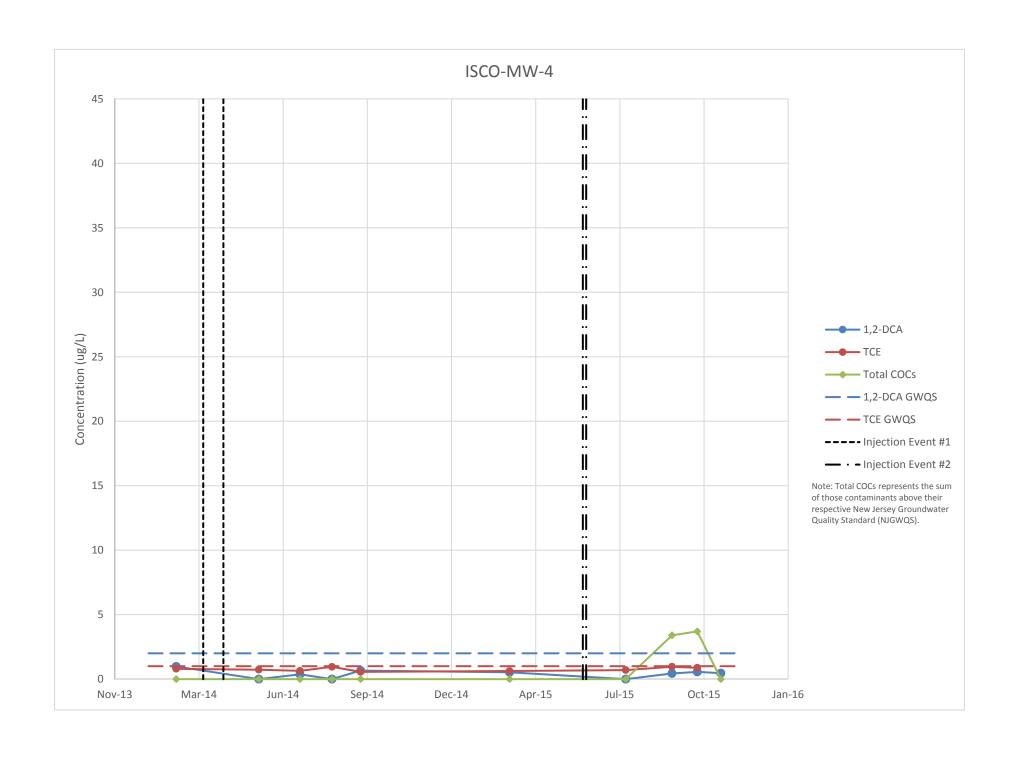


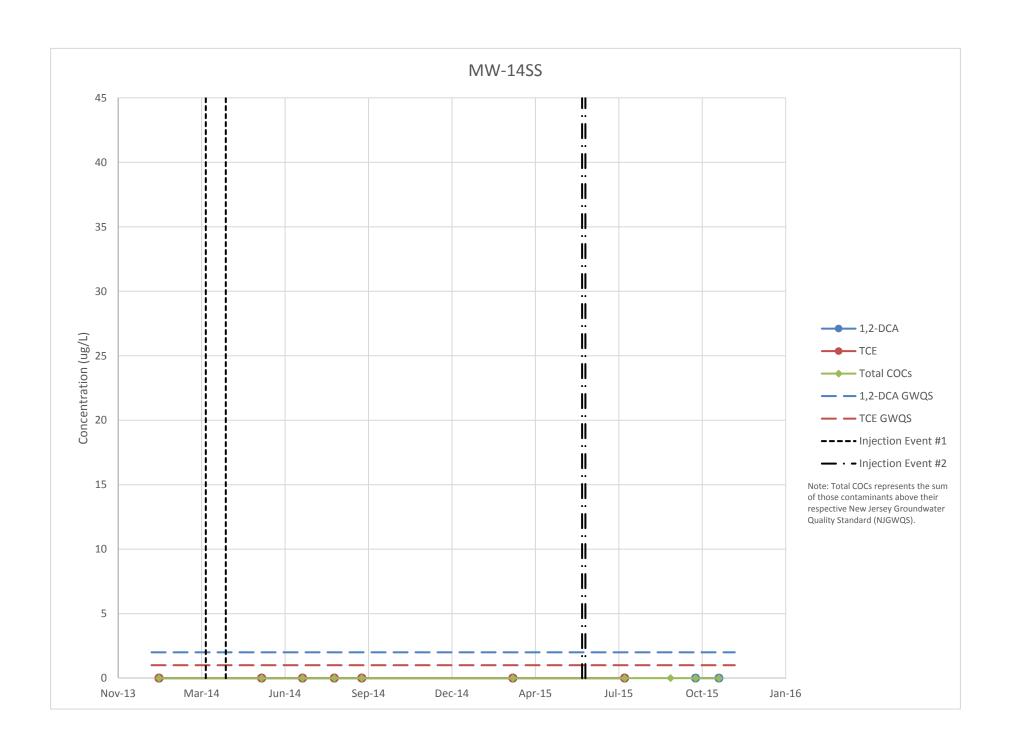


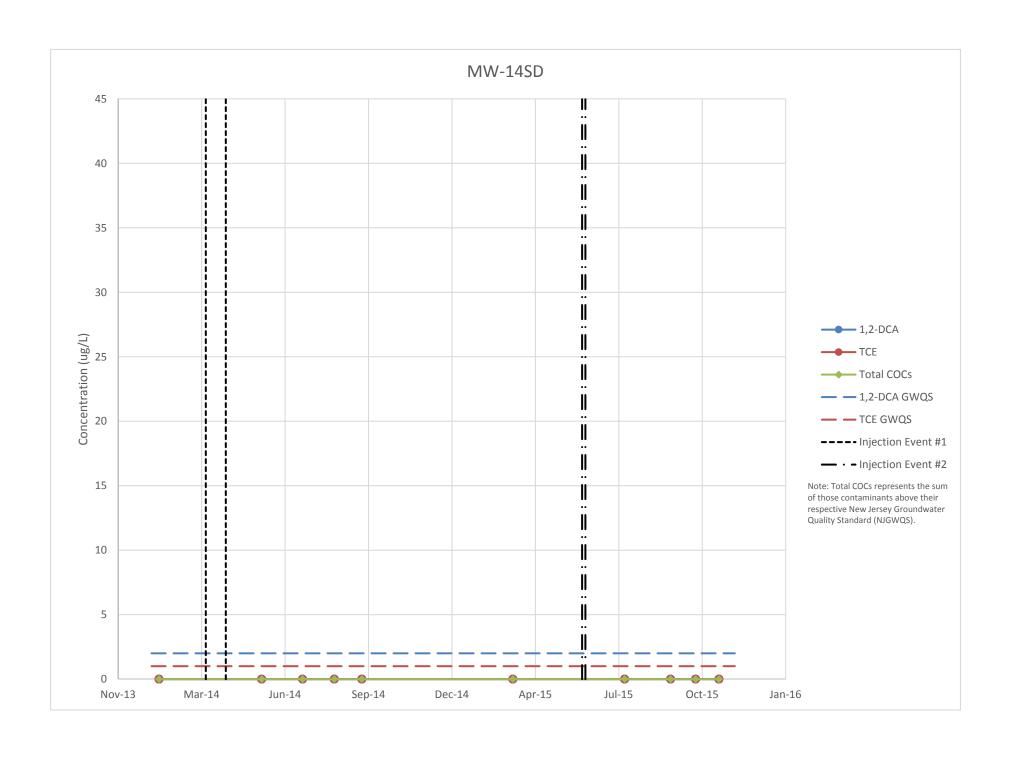


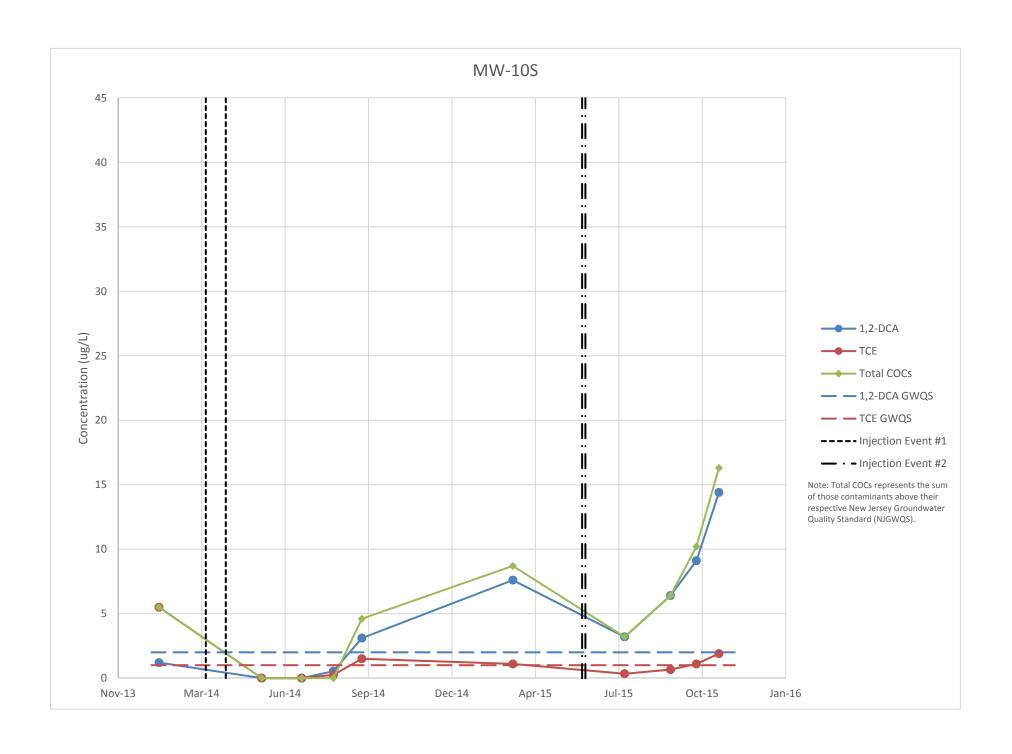


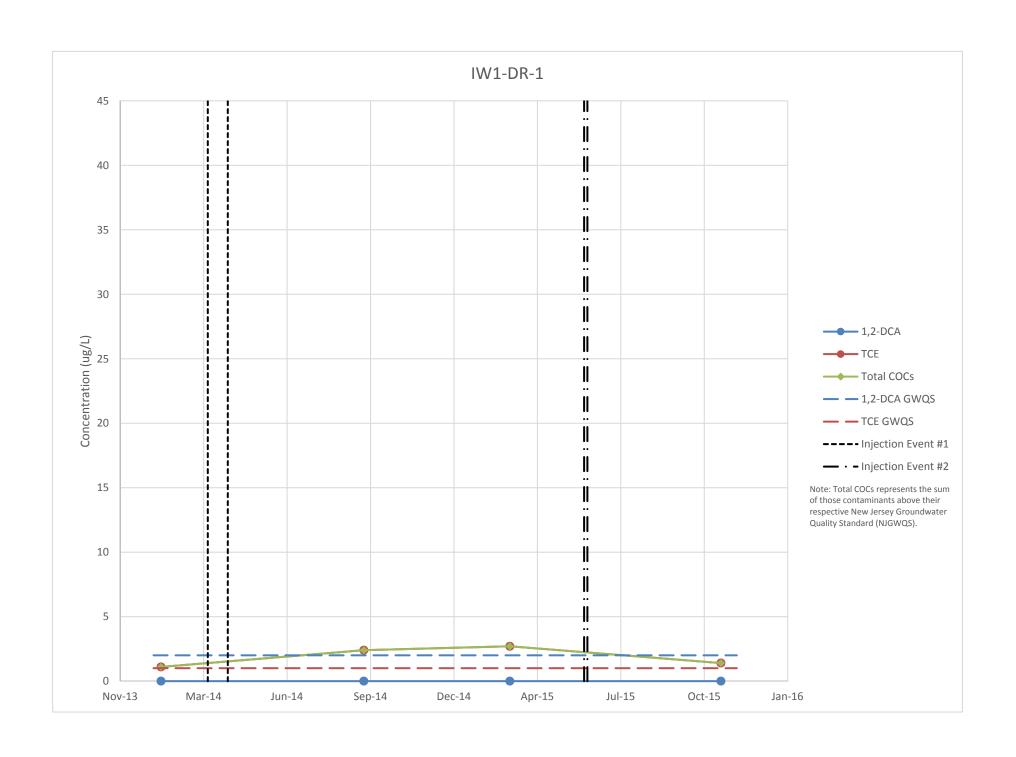


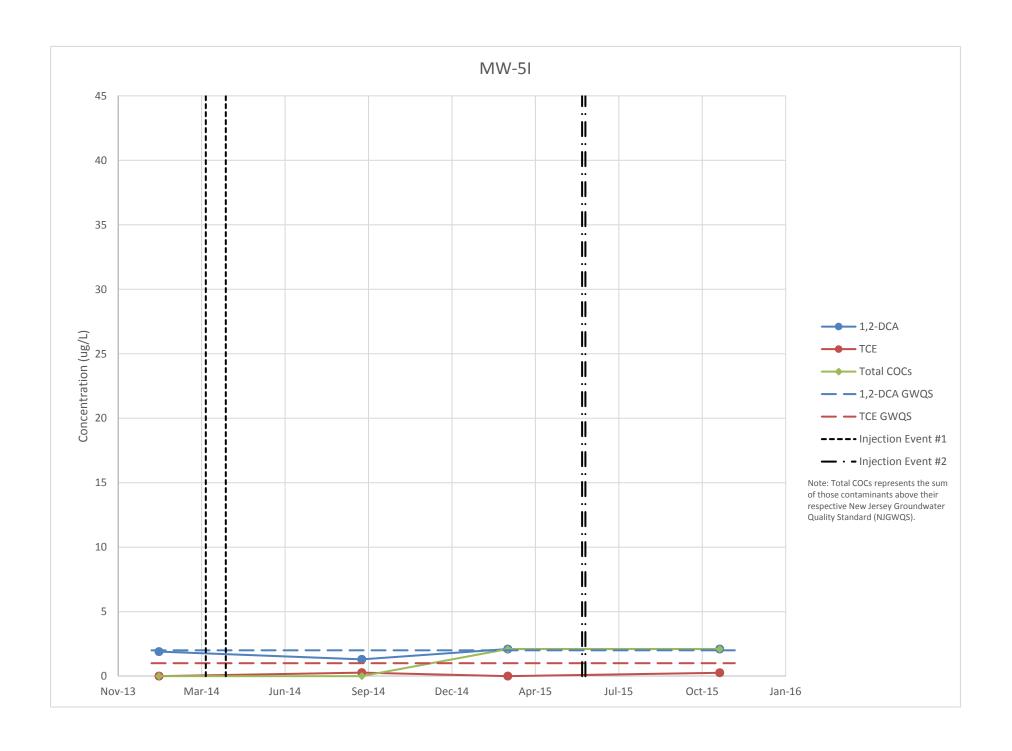


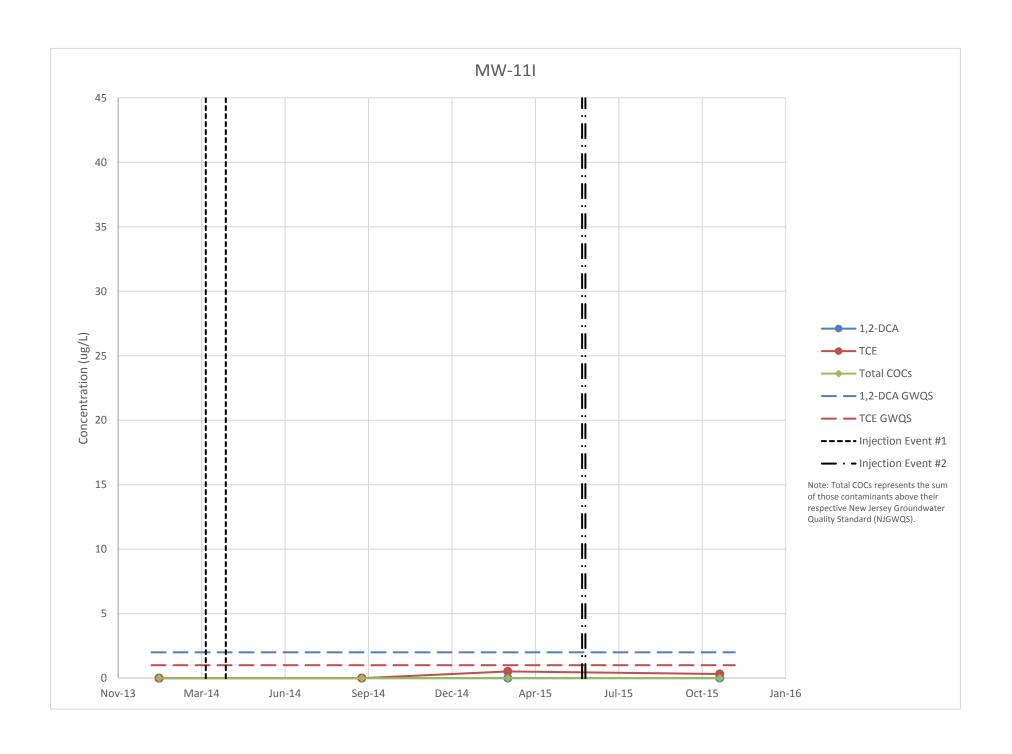




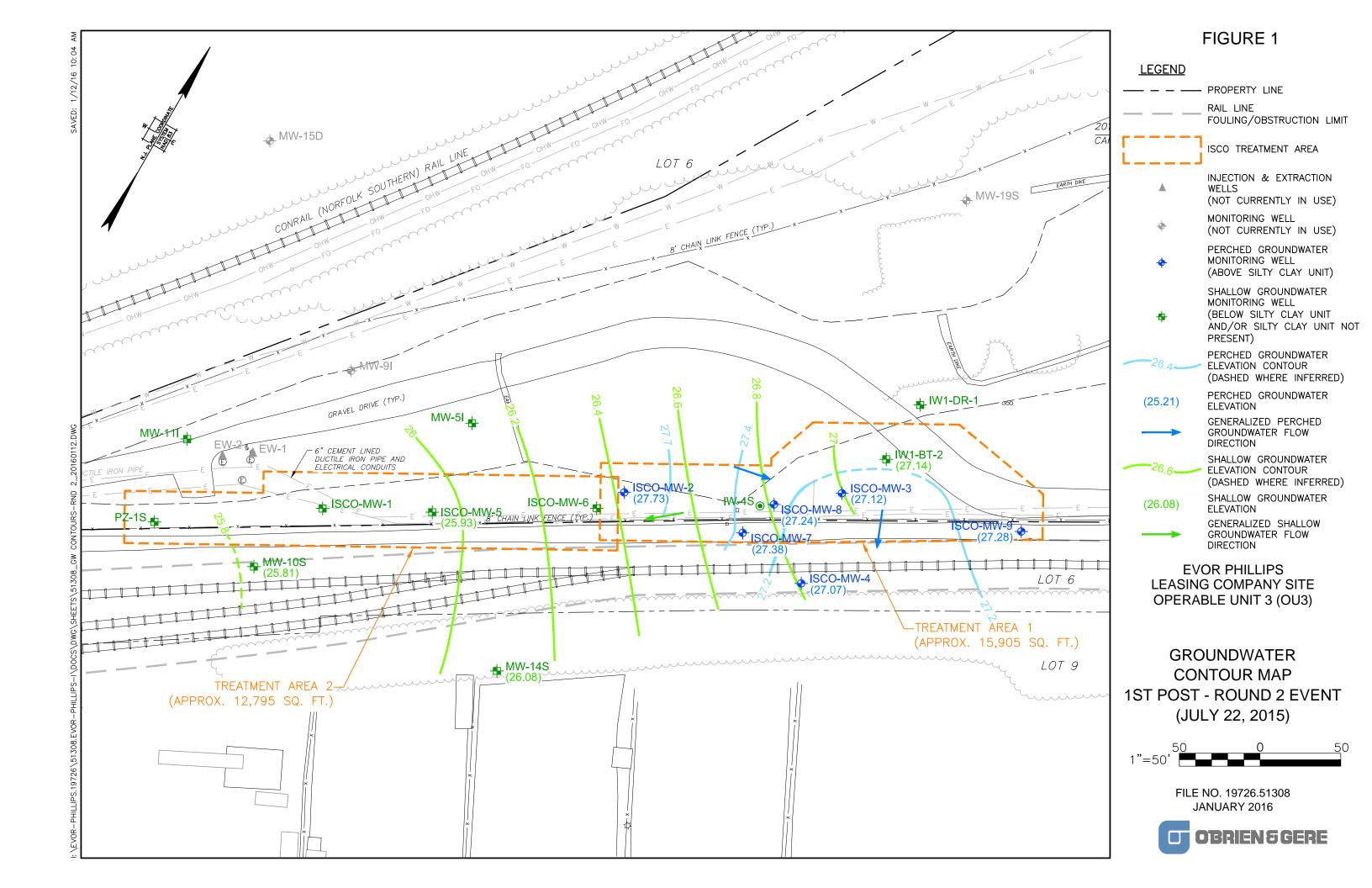


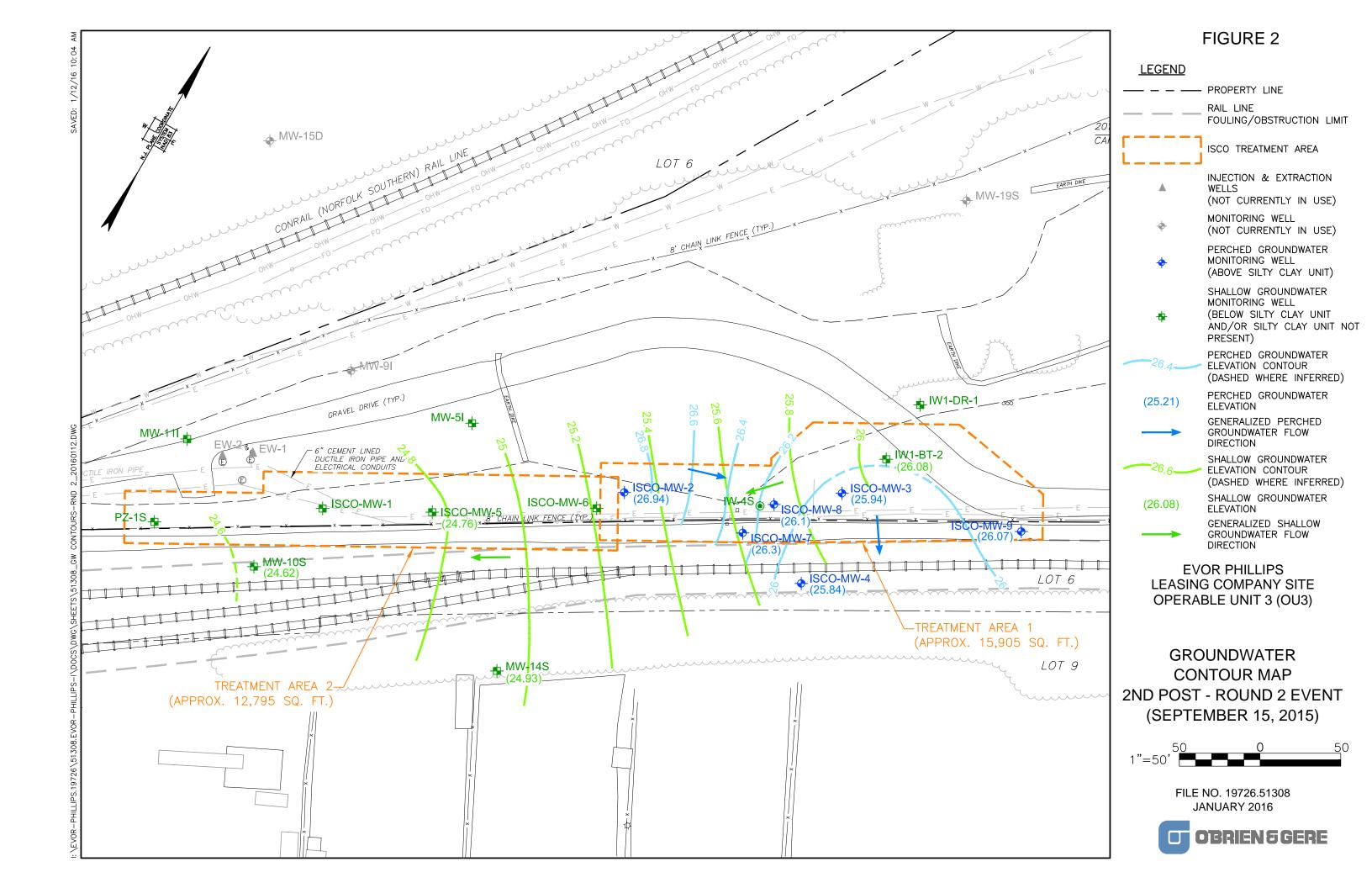


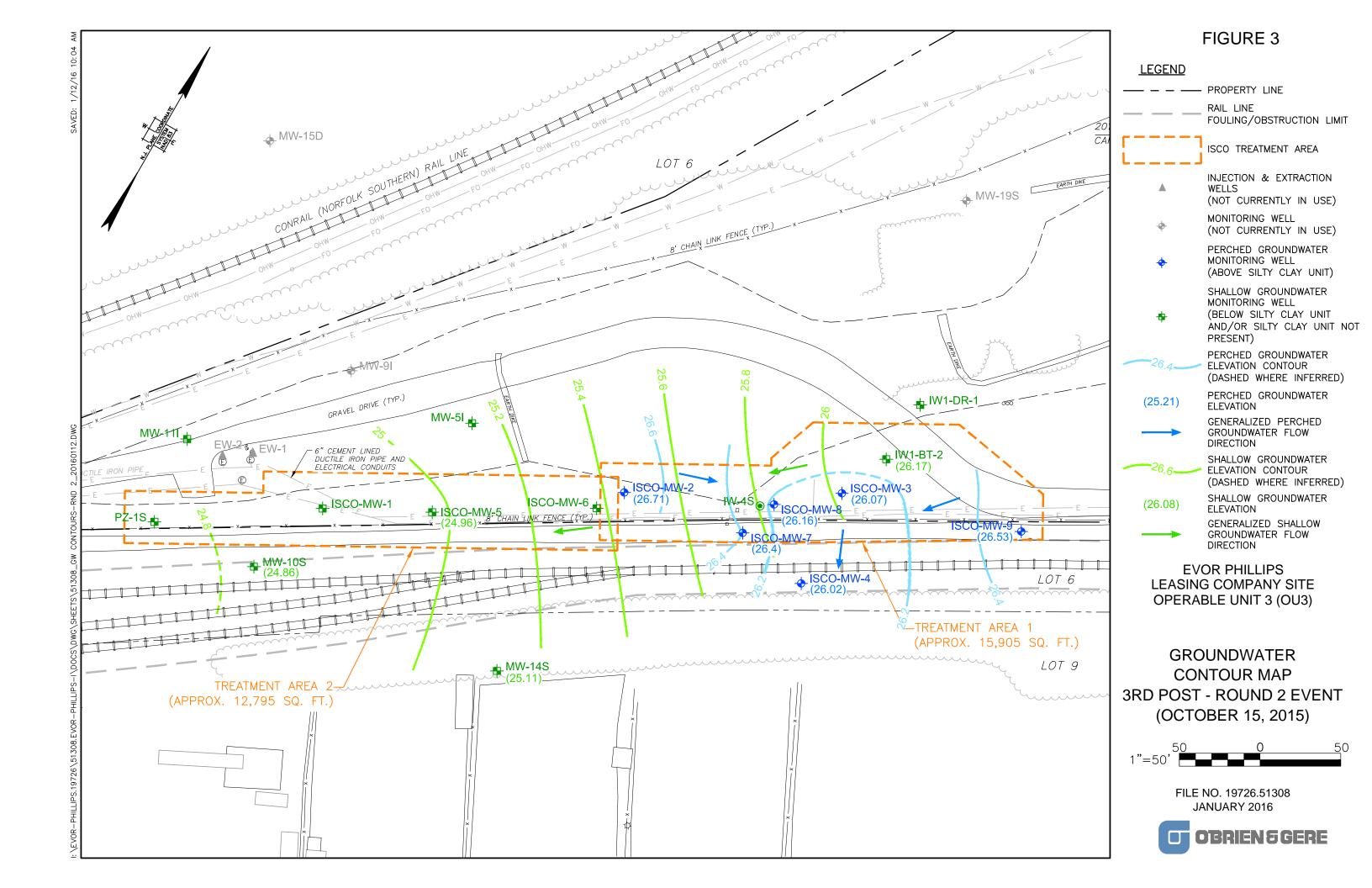


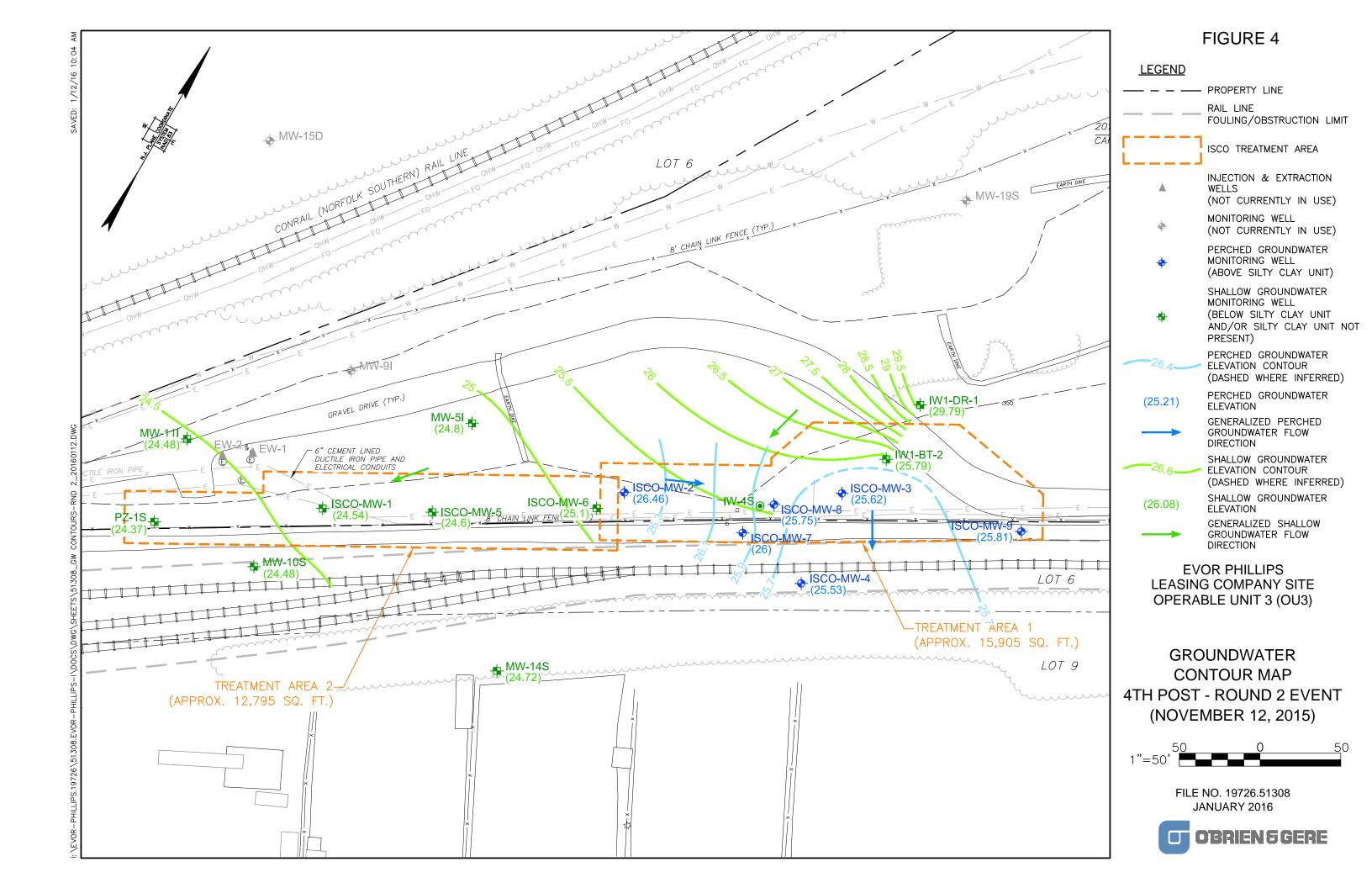


# Attachment 6 Groundwater Elevation Contour Maps



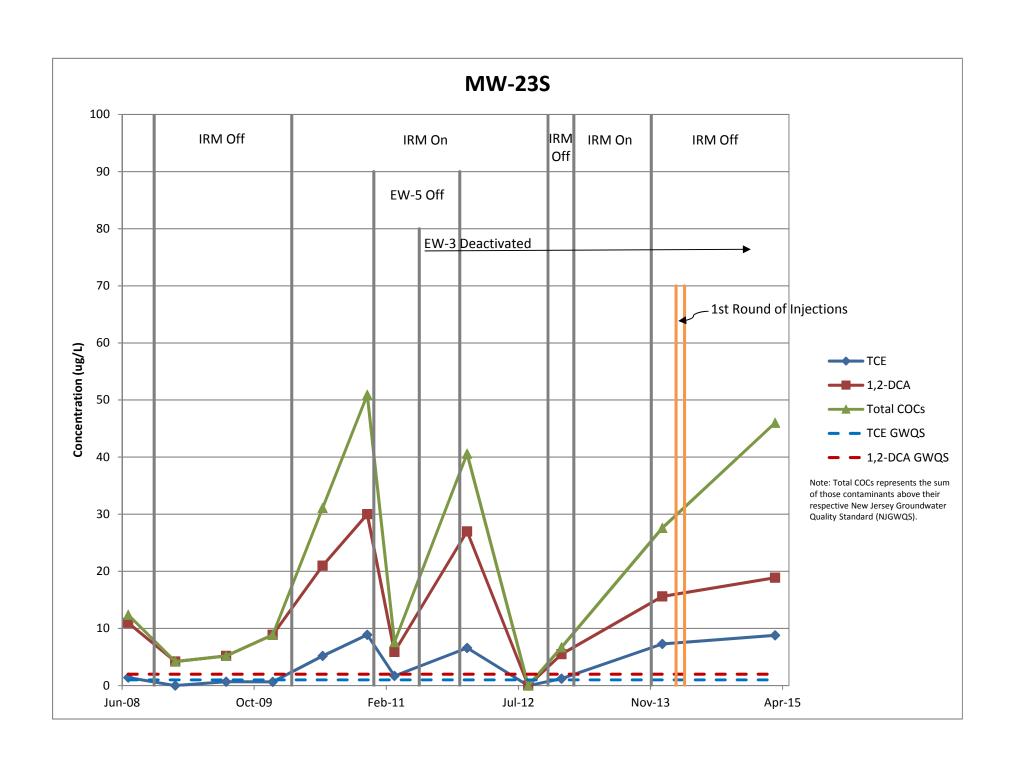


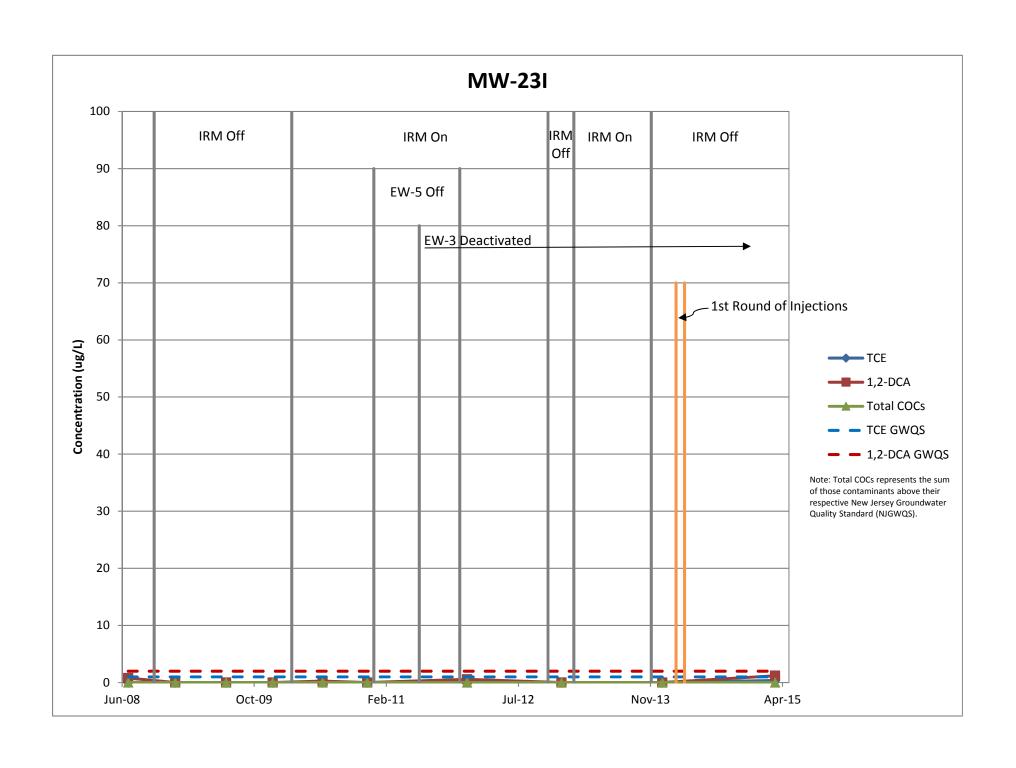


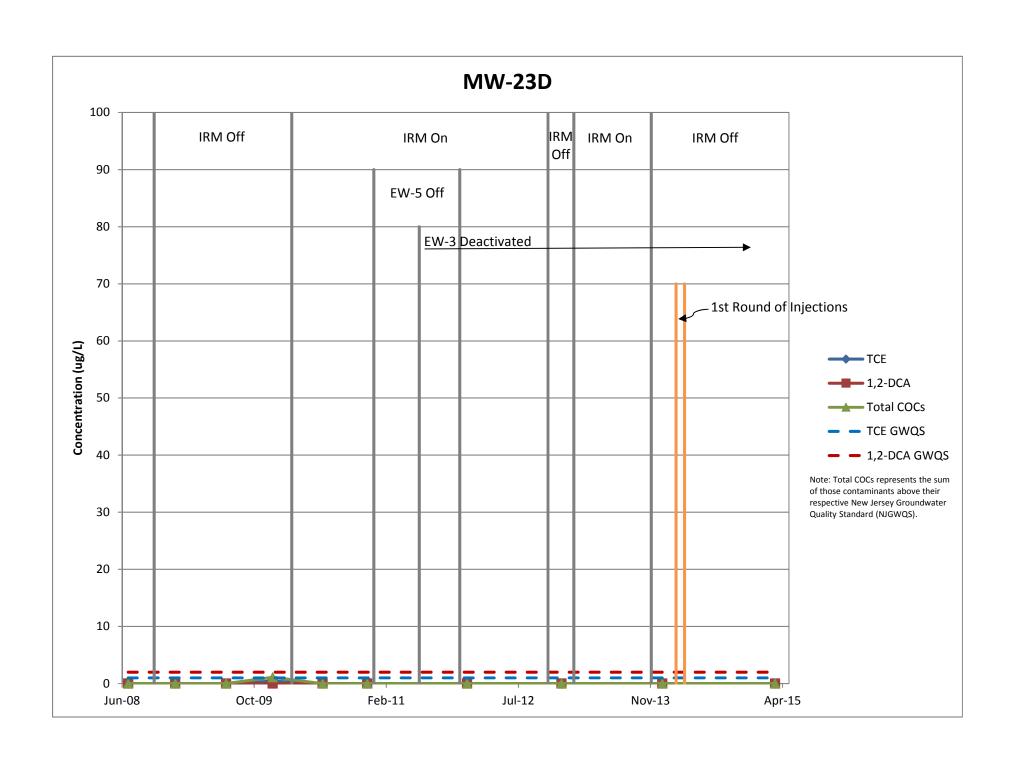


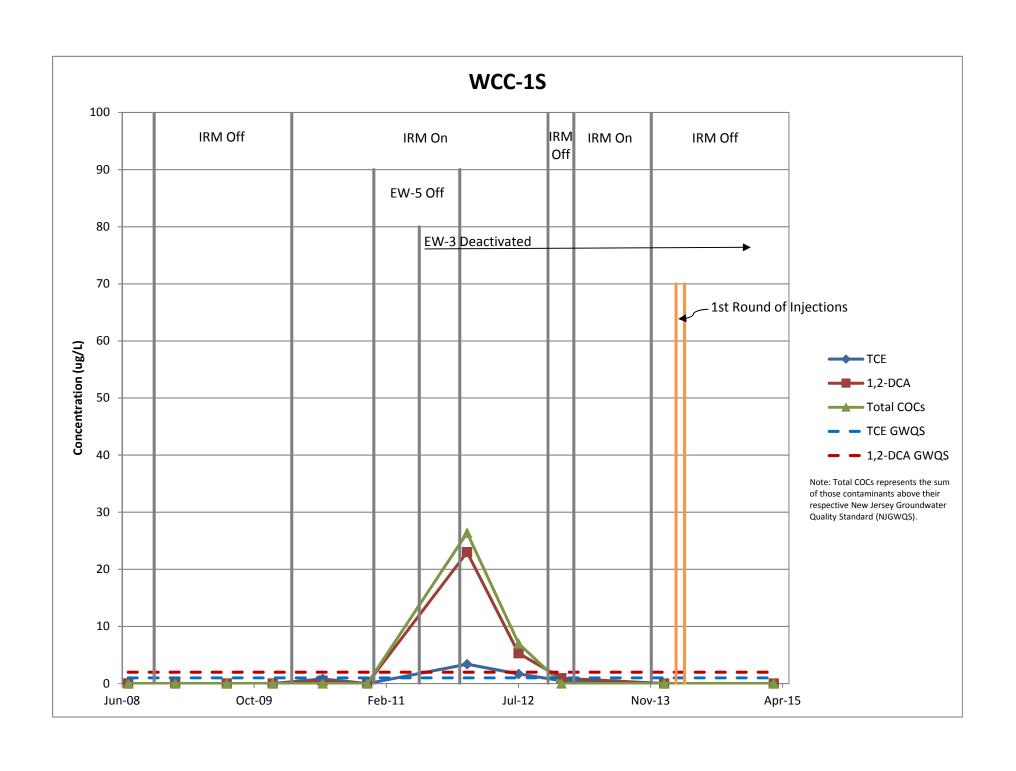
# **Attachment 7**

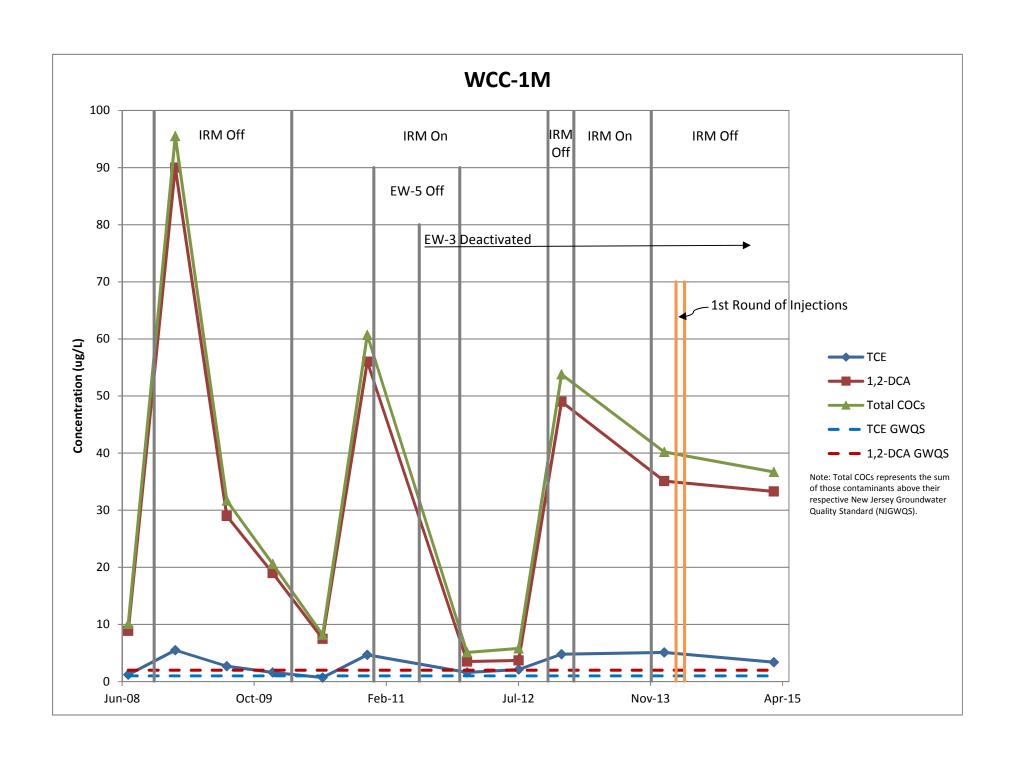
CPS/Madison Property
Wells Groundwater
Results Trend Graphs

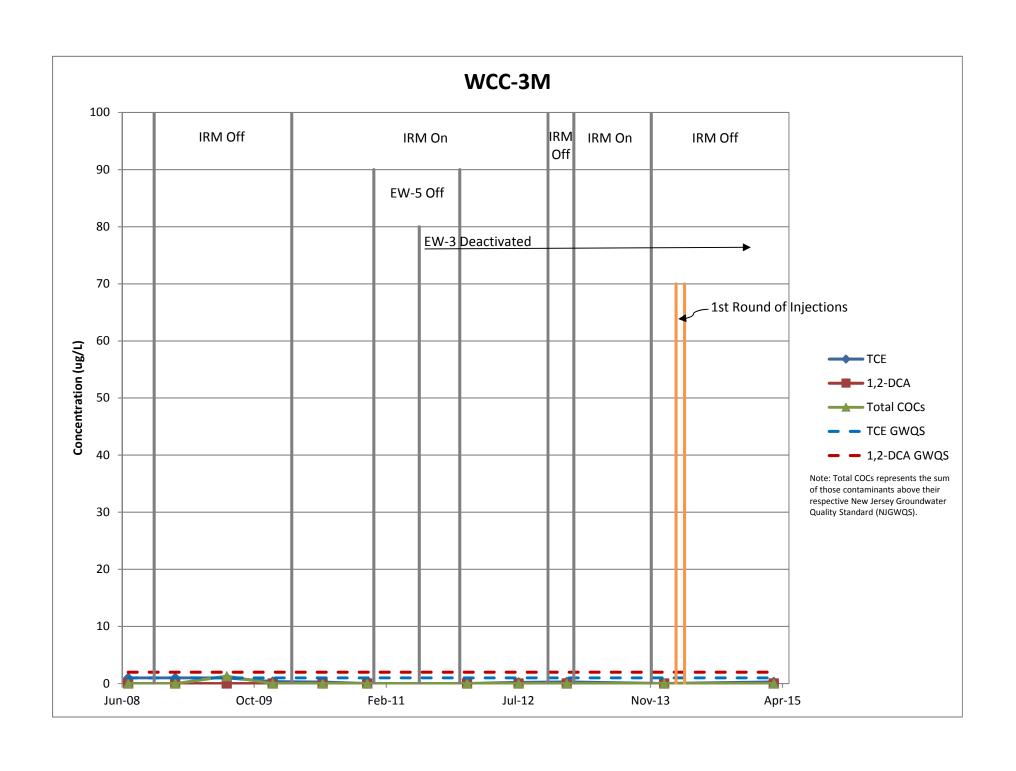












Attachment 8

Data Validation Report

### **MEMORANDUM**

TO: J. Levesque cc: J. Lehigh

**FROM:** K. Storne

Evor Phillips Leasing Company (EPLC) Superfund Site, OU3

**RE:** Post-Injection Round 2 Performance Groundwater

Sampling Monitoring Events, Data Validation Report

**FILE:** 1976/51308.007.001/.002/.003/.004

**DATE:** January 8, 2016

This report presents the data validation results performed for environmental samples collected in July, September, October and November 2015 for the Post-Injection Round 2 Performance Groundwater Monitoring Events as part of the OU3-Site Groundwater Remedial Action at the Evor Phillips Leasing Company (EPLC) Superfund Site in Old Bridge Township, New Jersey.

#### SAMPLE AND VALIDATION SUMMARY

The environmental samples collected for this effort consisted of groundwater samples, matrix spike/matrix spike duplicate, field duplicate, field blanks and trip blanks. Samples were analyzed by Accutest Laboratories of Dayton, New Jersey (Accutest New Jersey).

The laboratory utilized the methods listed in Table 1 for sample analyses.

<b>Table 1.</b> Analytical methods and	le 1. Analytical methods and references	
Parameter	Methods	Reference
VOCs	USEPA Methods8000C/5030B/8260C	1
Metals	USEPA Methods 3010A/6010C	2
Sulfate	USEPA Method 9056A/300.0	2/4
TDS	SM20 2540C	3

#### Note:

VOCs indicates volatile organic compounds.

TDS indicates total dissolved solids.

- United States Environmental Protection Agency (USEPA). 2006. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846, 3rd Edition. Washington D.C.
- 2. USEPA. 2007. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846, 3rd Edition, Update IV. Washington D.C.
- 3. AWWA, APHA, WEF. 1998. Standard Methods for the Examination of Water and Wastewater, 20th Edition. Washington, D.C.
- 4. USEPA. 1993a. Methods for the Determination of Inorganic Substances in Environmental Samples, EPA-600/R-93/100. Washington, D.C.

The laboratory data packages included summary forms for quality control analysis and supportive raw data.

The samples submitted for data review are summarized in the attached Table 2. Table 3 presents the specific data validation approach applied to data generated. Table 4 presents the Laboratory quality assurance/quality control (QA/QC) analyses definitions.

In accordance with the approved RDR/RAWP, full validation was performed on 10 percent of the samples collected and submitted for validation. This consisted of a review of data summary forms and raw analytical data provided in the data packages. Partial validation was performed on the remaining data. Partial data quality review consists of a review of only analytical QC summary forms that are included in the data package. The forms and the information on the forms are not evaluated for accuracy or completeness during partial data validation.

The analytical data generated for this investigation were evaluated by O'Brien & Gere using the QA/QC criteria established in the methods utilized by the laboratories and the following document:

 O'Brien & Gere. 2014. Uniform Federal Policy Quality Assurance Project Plan, Operable Unit 3 (OU3) – Site Groundwater Evor Phillips Leasing Company (EPLC) Superfund Site, Old Bridge Township, New Jersey. Edison, New Jersey. (QAPP)

Data affected by excursions from these criteria were qualified using professional judgment and the general validation approach provided in the following validation guideline documents, modified to reflect the requirements of the methods utilized by the laboratories:

- New Jersey Department of Environmental Protection (NJDEP). 2001a. Standard Operating Procedure (SOP) for Analytical Data Validation of Target Analyte List (TAL) – Inorganics, SOP No. 5.A.2. Trenton, New Jersey
- NJDEP. 2001b. Standard Operating Procedures for the Quality Assurance Data Validation of Analytical Deliverables – TCL- Organics (based on the USEPA SOW OLM04.2 with Revisions), SOP No. 5.A.13. Trenton, New Jersey

The application of these validation guidelines has been modified to reflect the requirements of the methods utilized by the laboratory.

In accordance with the NJDEP guidance, and utilizing professional judgment, the following qualifiers are used in this type of data review:

- "U" Indicates that the analyte was analyzed for, but was not detected.
- "J" Indicates that the result should be considered to be an estimated value. This qualifier is used when the data validation process identifies a deficiency in the data generation process.
- "UJ" Indicates that the sample-specific reporting limit for the analyte in this sample should be considered approximate. This qualifier is used when the data validation process identifies a deficiency in the data generation process.
- "R" Indicates that the reporting limit or sample result has been determined to be unusable due to a major deficiency in the data generation process. The data should not be used for any qualitative or quantitative purposes.

In addition, in accordance with the NJDEP guidance, the following single word descriptors were added to analyte results if the reported analyte required a quality assurance action.

- Qualify (Q) used when the results of a given analyte in a sample do not meet all QA/QC criteria but the deficiencies are not severe enough to warrant data rejection.
- Negate (N) used when the presence of a given analyte in a sample can be attributed to the laboratory/field introduced contamination.
- Reject (R) used when the results of a given analyte in a sample do not meet all QA/QC criteria so that the qualitative presence and/or quantitation of that analyte in the sample cannot be determined with any degree of confidence.

Footnotes, based on the NJDEP validation guidance, were applied to each qualifier to define the type of excursion that affected the sample result, resulting in the qualification of the data. The footnote used in this validation are presented in Table 5 below.

Table 5. Valid	lidation Footnote Definitions	
Footnote	Type of Excursion	
19	The reported metal value was qualified because the spike recovery was between 25 and 74 percent.	
25	The reported metal value was qualified because the Serial Dilution was not within ten percent of sample concentration.	
35A	Result was qualified due to a holding time excursion.	
39	The reported concentration is quantitative qualified because the concentration is below the RL.	
81B	Results are qualified due to surrogate analysis excursion.	
90	Results are qualified due to field duplicate excursions.	
91	Results are qualified due to calibration excursions.	

The following parameters were evaluated, where applicable:

- QAPP compliance
- Documentation completeness
- Chain-of-custody record
- Sample collection
- Sample preservation
- Holding times
- Calibrations (Full validation only)
- Blank analysis
- Matrix spike/ matrix spike duplicate (MS/MSD) analysis
- Laboratory Control Sample (LCS) analysis
- Field duplicate analysis
- Surrogate recovery
- Internal standards performance
- Gas chromatography/mass spectrometry (GC/MS) instrument performance check (Full validation only)
- Inductively coupled plasma (ICP) interference check analysis (Full validation only)
- ICP serial dilution analysis
- Laboratory duplicate analysis
- Target analyte quantitation, identification, and quantitation limits (QLs) (Full validation only)

The following sections of this memorandum present the results of the comparison of the analytical data to the QA/QC criteria specified above.

#### **SAMPLE PRESERVATION**

The pH values for the following samples submitted for VOC analysis, were greater than the preservations requirement of less than 2 due to sample matrix:

- 2RND2\_ISCO-MW-8\_091615
- 2RND2\_ISCO-MW-3\_091615
- 2RND2\_ISCO-MW-2\_091615
- 2RND1\_ISCO-MW-2\_072215
- 2RND1\_ISCO-MW-8\_072215
- 2RND1\_IW-1BT2\_072315
- 2RND1\_ISCO-MW-2\_072215 ASC
- 2RND1\_ISCO-MW-3\_072315
- 2RND1\_ISCO-MW-3\_072315 ASC

- 2RND3\_ISCO-MW-8\_101515
- 2RND3\_ISCO-MW-2\_101615
- 2RND4\_ISCO-MW-8\_111315
- 2RND4 ISCO-MW-2 111315

Validation actions are addressed in the following section.

#### CHAIN OF CUSTODY RECORD

For samples collected 7/22/15 to 7/23/15, the following samples were not included on the record but were received by the laboratory and were analyzed and reported as directed by O'Brien & Gere:

- 2RND1\_MW-9\_072215 ASC
- 2RND1\_ISCO-MW-5\_072215 ASC
- 2RND1 ISCO-MW-2 072215 ASC
- 2RND1\_ISCO-MW-3\_072315 ASC

For sample 2RND1\_ISCO-MW-3\_072315 ASC, the field identification was incorrectly documented in the data package as 2RND1\_ISCO-MW-3\_072215 ASC.

#### **VOC DATA EVALUATION SUMMARY**

The following QA/QC parameters were found to meet method and validation criteria or did not result in additional qualification of sample results:

- QAPP compliance
- Documentation completeness
- Sample collection
- Blank analysis
- MS/MSD analysis
- LCS analysis
- Field duplicate analysis
- Internal standards performance
- GC/MS instrument performance check (Full validation only)
- Target analyte identification

Excursions from method or validation criteria were not identified during the validation process. Additional observations are described below.

#### I. Holding times

For the following samples, since the pH values were greater than the preservations requirement of less than 2 and the samples were analyzed outside of the seven day holding time requirement, the samples were qualified as approximate (UJ, J, 35A):

- 2RND2 ISCO-MW-2 091615
- 2RND1\_ISCO-MW-3\_072315
- 2RND1 ISCO-MW-2 072215 ASC
- 2RND1\_ISCO-MW-3\_072315 ASC
- 2RND3 ISCO-MW-8 101515
- 2RND3 ISCO-MW-2 101615.

#### II. Surrogate recovery

Results for the following samples were qualified as approximate (UJ, J, 81B) due to minor surrogate recovery accuracy excursions

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VOCs in samples 2RND2\_ISCO-MW-8\_091615, 2RND1\_ISCO-MW-2\_072215, 2RND1\_ISCO-MW-8\_072215 and 2RND1\_ISCO-MW-3\_072315.

#### III. Calibration

Results for the following samples were qualified as approximate (UJ, J, 91) due to minor calibration response factor accuracy excursions:

- Acetone and methyl acetate in samples 2RND2\_ISCO-MW-4\_091515, 2RND2\_MW-10S\_091515, 2RND2\_ISCO-MW-9\_091515, 2RND2\_ISCO-MW-5\_091515, 2RND2\_FB\_091515, 2RND2\_IB1-BT-2\_091615, 2RND2\_DUP\_091615 [2RND2\_IB1-BT-2\_091615], 2RND2\_ISCO-MW-3\_091615, 2RND2\_ISCO-MW-8\_091615, 2RND2\_FB\_091615, 2RND2\_TRIPBLANK, 2RND2\_ISCO-MW-2\_091615, 2RND2\_MW-14SD\_091515 and 2RND2\_MW-14SS\_091515.
- 2-Butanone, 2-hexanone and methyl acetate in sample 2RND2\_ISCO-MW-7\_091515.
- 2-Butanone and 2-hexanone in samples 2RND1\_MW-14SS\_072215, 2RND1\_MW-14SD\_072215, 2RND1\_ISCO-MW-4\_072215, 2RND1\_MW-10S\_072215, 2RND1\_ISCO-MW-5-072215, 2RND1\_ISCO-MW-7\_072215, 2RND1\_ISCO-MW-2-072215, 2RND1\_ISCO-MW-8\_072215, TRIPBLANK\_072215, 2RND1\_FB\_072215, 2RND1\_IW-1-BT2\_072315, TRIPBLANK\_072315, 2RND1\_FB\_072315, 2RND1\_DUP\_072215 [2RND1\_ISCO-MW-5\_072215] and 2RND1\_ISCO-MW-3\_072315.
- 2-Butanone in samples 2RND1\_MW-9\_072215 ASC, 2RND1\_ISCO-MW-5-072215 ASC and 2RND1\_ISCO-MW-3\_072315.
- Acetone in samples 2RND3\_DUP\_101515 [2RND3\_ISCO-MW-9\_101515], 2RND3\_ISCO-MW-5\_101615, 2RND3\_IW1-BT-2\_101615, 2RND3\_ISCO-MW-2\_101615, 2RND3\_ISCO-MW-4\_101515, 2RND3\_MW-14SS\_101515, 2RND3\_MW-14SD\_101515, 2RND3\_FB\_101515, 2RND3\_MW-10S\_101615, 2RND3\_ISCO-MW-2\_101615, 2RND3\_FB\_101615 and 2RND3\_TRIPBLANK.
- Methyl acetate, 2-butanone and 2-hexanone in samples 2RND3\_DUP\_101515 [2RND3\_ISCO-MW-9\_101515], 2RND3\_ISCO-MW-5\_101615 and 2RND3\_IW1-BT-2\_101615.
- Acetone, methyl acetate, 2-butanone and 2-hexanone in samples 2RND4\_IW1-DR-1\_111215, 2RND4\_ISCO-MW-4\_111215, 2RND4\_IW1-BT-2\_111215, 2RND4\_MW-14SS\_111215, 2RND4\_MW-14SD\_111215, 2RND4\_MW-10S\_111215, 2RND4\_ISCO-MW-9\_111215, 2RND4\_ISCO-MW-3\_111215, 2RND4\_DUP\_111215[2RND4\_ISCO-MW-10\_101215], 2RND4\_FB\_111215, 2RND4\_MW-11I\_111315, 2RND4\_ISCO-MW-8\_111315, 2RND4\_ISCO-MW-7\_111315, 2RND4\_MW-5I\_111315, 2RND4\_PZ-1S\_111315, 2RND4\_ISCO-MW-2\_111315, 2RND4\_ISCO-MW-1\_111315, 2RND4\_ISCO-MW-5\_111315, 2RND4\_ISCO-MW-6\_111315, 2RND4\_FB\_111315 and 2RND4\_TRIPBLANK.
- Methyl acetate and 2-butanone in samples 2RND3\_ISCO-MW-2\_101615, 2RND3\_ISCO-MW-4\_101515, 2RND3\_MW-14SS\_101515, 2RND3\_MW-14SD\_101515, 2RND3\_FB\_101515, 2RND3\_ISCO-MW-2\_101615, 2RND3\_FB\_101615 and 2RND3\_TRIPBLANK.
- Acetone and 2-butanone in samples 2RND3\_ISCO-MW-9\_101515, 2RND3\_ISCO-MW-7\_101515, 2RND3\_ISCO-MW-3\_101515 and RND3\_ISCO-MW-8\_101515.

Results for the following samples were qualified as approximate (UJ, J, 91) due to minor calibration accuracy excursions:

Dichlorofluoromethane, Trichlorofluoromethane, carbon tetrachloride and bromoform in samples 2RND2\_ISCO-MW-4\_091515, 2RND2\_MW-10S\_091515, 2RND2\_ISCO-MW-9\_091515, 2RND2\_ISCO-MW-5\_091515, 2RND2\_FB\_091515, 2RND2\_IB1-BT-2\_091615, 2RND2\_DUP\_091615 [2RND2\_IB1-BT-2\_091615], 2RND2\_ISCO-MW-3\_091615, 2RND2\_ISCO-MW-8\_091615, 2RND2\_FB\_091615 and 2RND2\_TRIPBLANK.

- Dichlorofluoromethane, Freon 113, carbon tetrachloride and bromoform in sample 2RND2\_ISCO-MW-2\_091615.
- 2-Hexanone and acetone in samples 2RND2\_MW-14SD\_091515 and 2RND2\_MW-14SS\_091515.
- Tetrachloroethene in samples 2RND1\_MW-14SS\_072215, 2RND1\_MW-14SD\_072215, 2RND1\_ISCO-MW-4\_072215 and 2RND1\_MW-10S\_072215.
- Dichlorodifluoromethane in samples 2RND1\_MW-9\_072215, 2RND1\_DUP\_072215 [2RND1\_ISCO-MW-5\_072215] and 2RND1\_ISCO-MW-3\_072315.
- 1,4-Dioxane and Freon 113 in samples 2RND3\_DUP\_101515[2RND3\_ISCO-MW-9\_101515], 2RND3\_ISCO-MW-5\_101615 and 2RND3\_IW1-BT-2\_101615.

#### IV. Target analyte quantitation and detection limits

Samples were analyzed using dilutions due to elevated concentrations of target analytes.

Sample results with concentrations greater than the method detection limits (MDL) but less than the QL were flagged as approximate (J) by the laboratory. This flag was retained during the validation process to indicate the data is approximate (J, 39).

#### METALS, SULFATE and TDS DATA EVALUATION SUMMARY

The following QA/QC parameters were found to meet method and validation criteria or did not result in additional qualification of sample results (where applicable):

- QAPP compliance
- Documentation completeness
- Sample collection
- Sample preservation
- Holding times
- Calibrations (Full validation only)
- Blank analysis
- LCS analysis
- Internal standard performance
- ICP interference check analysis (Full validation only)
- Laboratory duplicate analysis

Excursions from method or validation criteria were not identified during the validation process. Additional observations are described below.

#### I. MS/MSD analysis

Results for the following samples were qualified as approximate (J, 19) due to minor MS accuracy excursions:

Sulfate in samples 2RND1\_MW-14SS\_072215, 2RND1\_MW-14SD\_072215, 2RND1\_ISCO-MW-4\_072215, 2RND1\_MW-10S\_072215, 2RND1\_ISCO-MW-5-072215, 2RND1\_ISCO-MW-7\_072215, 2RND1\_ISCO-MW-2-072215, 2RND1\_ISCO-MW-8\_072215, 2RND1\_IW-1-BT2\_072315, 2RND1\_MW-9\_072215, 2RND1\_DUP\_072215 [2RND1\_ISCO-MW-5\_072215] and 2RND1\_ISCO-MW-3\_072315.

#### II. Field duplicate analysis

Results for the following samples were qualified as approximate (UJ, J, 90) due to minor field duplicate precision excursions:

Chromium in samples 2RND3\_ISCO-MW-4-101515, 2RND3\_MW-14SS\_101515, 2RND3\_MW-14SD\_101515, 2RND3\_ISCO-MW-9\_101515, 2RND3\_ISCO-MW-7\_101515, 2RND3\_ISCO-MW-3\_101515, 2RND3\_ISCO-MW-8\_101515, 2RND3\_DUP\_101515[2RND3-ISCO-MW-9\_101515], 2RND3\_MW-10S\_101615, 2RND3\_ISCO-MW-5\_101615, 2RND3\_IW1-BT-2\_101615, 2RND3\_ISCO-MW-2\_101615, 2RND4\_IW1-DR-1\_111215, 2RND4\_ISCO-MW-4\_111215, 2RND4\_IW1-BT-2\_111215, 2RND4\_MW-14SS\_111215, 2RND4\_MW-14SD\_111215, 2RND4\_MW-10S\_111215, 2RND4\_ISCO-MW-9\_111215, 2RND4\_ISCO-MW-3\_111215, 2RND4\_ISCO-MW-10\_101215], 2RND4\_MW-11I\_11315, 2RND4\_ISCO-MW-8\_111315, 2RND4\_ISCO-MW-7\_111315, 2RND4\_ISCO-MW-5\_111315, 2RND4\_ISCO-MW-6\_111315.

#### III. ICP Serial dilution analysis

Results for the following samples were qualified as approximate (J, 25) due to a minor serial dilution accuracy excursion:

Sodium in samples 2RND2\_ISCO-MW-4-091515, 2RND2\_MW-14SD\_091515, 2RND2\_MW-14SS\_091515, 2RND2\_MW-10S\_091515, 2RND2\_ISCO-MW-9\_091515, 2RND2\_ISCO-MW-5\_091515, 2RND2\_ISCO-MW-7\_091515, 2RND2\_IB1-BT-2\_091615, 2RND2\_DUP\_091616 [2RND2\_IB1-BT-2\_091615], 2RND2\_ISCO-MW-3\_091615, 2RND2\_ISCO-MW-2\_091615 and 2RND2\_ISCO-MW-8\_091615.

#### IV. Target analyte quantitation and QLs

Results for metals and inorganics were reported to the QL concentration.

Metals and sulfate were reported using dilutions due to elevated concentrations of target analytes.

#### **DATA USABILITY**

The data from the samples on Table 2 were evaluated based on QA/QC criteria established by the methods listed in Table 1 and the data validation approach as described in Table 3.

Major deficiencies in the data generation process would have resulted in data points being rejected, indicating that the data are considered unusable for either quantitative or qualitative purposes. Major deficiencies were not identified during the validation process. Minor deficiencies in the data generation process would have resulted in sample data being characterized as approximate or non-detected. Minor deficiencies were not identified during the validation process.

A discussion of the data quality with regard to the data usability parameters follows:

<u>Precision</u>: Data were not rejected for precision excursions.

<u>Sensitivity</u>: Sensitivity is established by QLs, which represent measurable concentrations of analytes which can be determined with a designated level of confidence, that meet project requirements. Dilutions were performed for analyses due to elevated concentrations of target analytes in the samples.

Accuracy: Data were not rejected for accuracy excursions.

Representativeness: Data were not rejected for representativeness excursions.

<u>Comparability</u>: Data usability with respect to comparability is 100 percent, as standardized analytical methods, QLs, reference materials, and data deliverables were used throughout the data generation process for this project.

<u>Completeness</u>: Based on the samples submitted for data validation, overall data usability was 100 percent with respect to completeness; therefore, the usability met the QAPP requirement of usable for qualitative and quantitative purposes.

Table 2. Sample Cross Reference Table

Samples colle	cted and subm	itted for data validation			
Laboratory Name	Date Collected	Client Identification	Laboratory Identification	Matrix	Analysis Requested
Accutest	22-Jul-15	2RND1_MW-14SS_072215	JB99691-1	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	22-Jul-15	2RND1_MW-14SS_072215-FILTERED	JB99691-1F	Groundwater	Metals
Accutest	22-Jul-15	2RND1_MW-14SD_072215	JB99691-2	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	22-Jul-15	2RND1_MW-14SD_072215-FILTERED	JB99691-2F	Groundwater	Metals
Accutest	22-Jul-15	2RND1_MW-9_072215	JB99691-3	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	22-Jul-15	2RND1_MW-9_072215-FILTERED	JB99691-3F	Groundwater	Metals
Accutest	22-Jul-15	2RND1_ISCO-MW-4_072215	JB99691-4	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	22-Jul-15	2RND1_ISCO-MW-4_072215-FILTERED	JB99691-4F	Groundwater	Metals
Accutest	22-Jul-15	2RND1_MW-10S_072215	JB99691-5	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	22-Jul-15	2RND1_MW-10S_072215-FILTERED	JB99691-5F	Groundwater	Metals
Accutest	22-Jul-15	2RND1_ISCO-MW-5_072215	JB99691-6	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	22-Jul-15	2RND1_ISCO-MW-5_072215-FILTERED	JB99691-6F	Groundwater	Metals
Accutest	22-Jul-15	2RND1_DUP_072215[2RND1_ISCO-MW-5_072215]	JB99691-7	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	22-Jul-15	2RND1_DUP_072215-FILTERED[2RND1_ISCO-MW-5_072215-FILTERED]	JB99691-7F	Groundwater	Metals
Accutest	22-Jul-15	2RND1 ISCO-MW-7 072215	JB99691-8	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	22-Jul-15	2RND1 ISCO-MW-7 072215-FILTERED	JB99691-8F	Groundwater	Metals
Accutest	22-Jul-15	2RND1 ISCO-MW-2 072215	JB99691-9	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	22-Jul-15	2RND1 ISCO-MW-2 072215-FILTERED	JB99691-9F	Groundwater	Metals
Accutest	22-Jul-15	2RND1_ISCO-MW-8_072215	JB99691-10	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	22-Jul-15	2RND1 ISCO-MW-8 072215-FILTERED	JB99691-10F	Groundwater	Metals
Accutest	23-Jul-15	TRIPBLANK 072215	JB99691-11	Aqueous	VOCs
Accutest	22-Jul-15	2RND1 FB 072215	JB99691-12	Aqueous	VOCs, Metals, Sulfate, TDS
Accutest	22-Jul-15 22-Jul-15	2RND1_FB_072215-FILTERED	JB99691-12F		Metals
Accutest	23-Jul-15	2RND1 ISCO-MW-3 072315	JB99691-13	Aqueous	<u> </u>
	23-Jul-15 23-Jul-15			Groundwater	VOCs, Metals, Sulfate, TDS
Accutest		2RND1_ISCO-MW-3_072315-FILTERED	JB99691-13F	Groundwater	Metals
Accutest	23-Jul-15	2RND1_IW-1-BT2_072315, MS/MSD	JB99691-14	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	23-Jul-15	2RND1_IW-1-BT2_072315-FILTERED, MS/MSD	JB99691-14F	Groundwater	Metals
Accutest	23-Jul-15	TRIPBLANK	JB99691-15	Aqueous	VOCs Manala Salfata TDS
Accutest	23-Jul-15	2RND1_FB_072315	JB99691-16	Aqueous	VOCs, Metals, Sulfate, TDS
Accutest	23-Jul-15	2RND1_FB_072315-FILTERED	JB99691-16F	Aqueous	Metals
Accutest	23-Jul-15	2RND1_MW-9_072215 ASC	JB99691-17	Groundwater	VOCs
Accutest	23-Jul-15	2RND1_ISCO-MW-5_072215 ASC	JB99691-18	Groundwater	VOCs
Accutest	23-Jul-15	2RND1_ISCO-MW-2_072215 ASC	JB99691-19	Groundwater	VOCs
Accutest	23-Jul-15	2RND1_ISCO-MW-3_072215 ASC	JB99691-20	Groundwater	VOCs
Accutest	15-Oct-15	2RND3_ISCO-MW-4_101515	JC6498-1	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	15-Oct-15	2RND3_ISCO-MW-4_101515-FILTERED	JC6498-1F	Groundwater	Metals
Accutest	15-Oct-15	2RND3_MW-14SS_101515	JC6498-2	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	15-Oct-15	2RND3_MW-14SS_101515-FILTERED	JC6498-2F	Groundwater	Metals
Accutest	15-Oct-15	2RND3_MW-14SD_101515	JC6498-3	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	15-Oct-15	2RND3_MW-14SD_101515-FILTERED	JC6498-3F	Groundwater	Metals
Accutest	15-Oct-15	2RND3_ISCO-MW-9_101515	JC6498-4	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	15-Oct-15	2RND3_ISCO-MW-9_101515-FILTERED	JC6498-4F	Groundwater	Metals
Accutest	15-Oct-15	2RND3_ISCO-MW-7_101515	JC6498-5	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	15-Oct-15	2RND3_ISCO-MW-7_101515-FILTERED	JC6498-5F	Groundwater	Metals
Accutest	15-Oct-15	2RND3_ISCO-MW-3_101515	JC6498-6	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	15-Oct-15	2RND3_ISCO-MW-3_101515-FILTERED	JC6498-6F	Groundwater	Metals
Accutest	15-Oct-15	2RND3_ISCO-MW-8_101515	JC6498-7	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	15-Oct-15	2RND3_ISCO-MW-8_101515-FILTERED	JC6498-7F	Groundwater	Metals
Accutest	15-Oct-15	2RND3_FB_101515	JC6498-8	Aqueous	VOCs, Metals, Sulfate, TDS
Accutest	15-Oct-15	2RND3_FB_101515-FILTERED	JC6498-8F	Aqueous	Metals
Accutest	15-Oct-15	2RND3_DUP_101515[2RND3_ISCO-MW-9_101515]	JC6498-9	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	15-Oct-15	2RND3_DUP_101515-FILTERED[2RND3_ISCO-MW-9_101515-FILTERED]	JC6498-9F	Groundwater	Metals
Accutest	16-Oct-15	2RND3_MW-10S_101615, MS/MSD	JC6498-10	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	16-Oct-15	2RND3_MW-10S_101615-FILTERED, MS/MSD	JC6498-10F	Groundwater	Metals
Accutest	16-Oct-15	2RND3_ISCO-MW-5_101615	JC6498-11	Groundwater	VOCs, Metals, Sulfate, TDS

Accutest	16-Oct-15	2RND3_ISCO-MW-5_101615-FILTERED	JC6498-11F	Groundwater	Metals
Accutest	16-Oct-15	2RND3_IW1-BT-2_101615	JC6498-12	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	10/16/2015	2RND3_IW1-BT-2_101615-FILTERED	JC6498-12F	Groundwater	Metals
Accutest	10/16/2015	2RND3_ISCO-MW-2_101615	JC6498-13	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	10/16/2015	2RND3_ISCO-MW-2_101615-FILTERED	JC6498-13F	Groundwater	Metals
Accutest	10/16/2015	2RND3_FB_101615	JC6498-14	Aqueous	VOCs, Metals, Sulfate, TDS
Accutest	10/16/2015	2RND3_FB_101615-FILTERED	JC6498-14F	Aqueous	Metals
Accutest	10/16/2015	2RND3_TRIP BLANK	JC6498-15	Aqueous	VOCs
Accutest	11/12/2015	2RND4_IW1-DR-1_111215	JC8568-1	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	11/12/2015	2RND4_IW1-DR-1_111215-FILTERED	JC8568-1F	Groundwater	Metals
Accutest	11/12/2015	2RND4_ISCO-MW-4_111215	JC8568-2	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	11/12/2015	2RND4_ISCO-MW-4_111215-FILTERED	JC8568-2F	Groundwater	Metals
Accutest	11/12/2015	2RND4_IW1-BT-2_111215	JC8568-3	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	11/12/2015	2RND4_IW1-BT-2_111215-FILTERED	JC8568-3F	Groundwater	Metals
Accutest	11/12/2015	2RND4_MW-14SS_111215	JC8568-4	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	11/12/2015	2RND4_MW-14SS_111215-FILTERED	JC8568-4F	Groundwater	Metals
Accutest	11/12/2015	2RND4_MW-14SD_111215, MS/MSD	JC8568-5	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	11/12/2015	2RND4_MW-14SD_111215-FILTERED, MS/MSD	JC8568-5F	Groundwater	Metals
Accutest	11/12/2015	2RND4_MW-10S_111215	JC8568-6	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	11/12/2015	2RND4_MW-10S_111215-FILTERED	JC8568-6F	Groundwater	Metals
Accutest	11/12/2015	2RND4_ISCO-MW-9_111215	JC8568-7	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	11/12/2015	2RND4_ISCO-MW-9_111215-FILTERED	JC8568-7F	Groundwater	Metals
Accutest	11/12/2015	2RND4_ISCO-MW-3_111215	JC8568-8	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	11/12/2015	2RND4_ISCO-MW-3_111215-FILTERED	JC8568-8F	Groundwater	Metals
Accutest	11/12/2015	2RND4_DUP_111215[2RND4_ISCO-MW-10_111215]	JC8568-9	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	11/12/2015	2RND4_DUP_111215-FILTERED[2RND4_ISCO-MW-10_111215-FILTERED]	JC8568-9F	Groundwater	Metals
Accutest	11/12/2015	2RND4_FB_111215	JC8568-10	Aqueous	VOCs, Metals, Sulfate, TDS
Accutest	11/12/2015	2RND4_FB_111215-FILTERED	JC8568-10F	Aqueous	Metals
Accutest	11/13/2015	2RND4_MW-11I_111315	JC8568-11	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	11/13/2015	2RND4_MW-11I_111315-FILTERED	JC8568-11F	Groundwater	Metals
Accutest	11/13/2015	2RND4_ISCO-MW-8_111315	JC8568-12	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	11/13/2015	2RND4_ISCO-MW-8_111315-FILTERED	JC8568-12F	Groundwater	Metals
Accutest	11/13/2015	2RND4_ISCO-MW-7_111315	JC8568-13	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	11/13/2015	2RND4_ISCO-MW-7_111315-FILTERED	JC8568-13F	Groundwater	Metals
Accutest	11/13/2015	2RND4_MW-5I_111315	JC8568-14	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	11/13/2015	2RND4_MW-5I_111315-FILTERED	JC8568-14F	Groundwater	Metals
Accutest	11/13/2015	2RND4_PZ-1S_111315	JC8568-15	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	11/13/2015	2RND4_PZ-1S_111315-FILTERED	JC8568-15F	Groundwater	Metals
Accutest	11/13/2015	2RND4_ISCO-MW-2_111315	JC8568-16	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	11/13/2015	2RND4_ISCO-MW-2_111315-FILTERED	JC8568-16F	Groundwater	Metals
Accutest	11/13/2015	2RND4_ISCO-MW-1_111315	JC8568-17	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	11/13/2015	2RND4_ISCO-MW-1_111315-FILTERED	JC8568-17F	Groundwater	Metals
Accutest	11/13/2015	2RND4_ISCO-MW-5_111315	JC8568-18	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	11/13/2015	2RND4_ISCO-MW-5_111315-FILTERED	JC8568-18F	Groundwater	Metals
Accutest	11/13/2015	2RND4_ISCO-MW-6_111315	JC8568-19	Groundwater	VOCs, Metals, Sulfate, TDS
Accutest	11/13/2015	2RND4_ISCO-MW-6_111315-FILTERED	JC8568-19F	Groundwater	Metals
Accutest	11/13/2015	2RND4_FB_111315	JC8568-20	Aqueous	VOCs, Metals, Sulfate, TDS
Accutest	11/13/2015	2RND4_FB_111315-FILTERED	JC8568-20F	Aqueous	Metals
Accutest	11/13/2015	2RND4_TRIP BLANK	JC8568-21	Aqueous	VOCs
Note:					

Note:

Accutest indicates Accutest Laboratories of Dayton, New Jersey.

VOCs indicates volatile organic compounds.

TDS indicates total dissolved solids.

MS/MSD indicates matrix spike/matrix spike duplicate.

DUP indicates field duplicate.

The sample identification utilized for field duplicate is shown in brackets.

TB indicates trip blank.

FB indicates field blank.



#### Table 3 - O'Brien & Gere data validation approach using NJDEP data validation guidelines

Data evaluation is based on QA/QC criteria established the methods utilized by the laboratory and quality plans developed for the project.

The NJDEP data validation guidance applies to data generated using USEPA CLP methods. This project was not analyzed using CLP methods. Therefore, data affected by excursions from criteria presented in the methods and quality plan are qualified using professional judgment with some consideration of the general guidance provided in the following documents:

- New Jersey Department of Environmental Protection (NJDEP). 2001a. Standard Operating Procedures for the Quality
   Assurance Data Validation of Analytical Deliverables TCL- Organics (based on the USEPA SOW OLM04.2 with Revisions),
   SOP No. 5.A.13. Trenton, New Jersey; and
- NJDEP. 2001b. Standard Operating Procedure (SOP) for Analytical Data Validation of Target Analyte List (TAL) Inorganics, SOP No. 5.A.2. Trenton, New Jersey.

The following qualifiers are applied to data:

not severe enough to warrant data rejection.

""U" Indicates that the analyte was analyzed for, but was not detected.

"J" Indicates that the result should be considered to be an estimated value. This qualifier is used when the data validation process identifies a deficiency in the data generation process.

"UJ" Indicates that the sample-specific reporting limit for the analyte in this sample should be considered approximate. This qualifier is used when the data validation process identifies a deficiency in the data generation process.

"R" Indicates that the reporting limit or sample result has been determined to be unusable due to a major deficiency in the data generation process. The data should not be used for any qualitative or quantitative purposes.

In addition, in accordance with the NJDEP guidance, the following single word descriptors were added to analyte results if the reported analyte required a quality assurance action.

# reported analyte required a quality assurance action. Qualify (Q) - used when the results of a given analyte in a sample do not meet all QA/QC criteria but the deficiencies are

- Negate (N) used when the presence of a given analyte in a sample can be attributed to the laboratory/field introduced contamination.
- Reject (R) used when the results of a given analyte in a sample do not meet all QA/QC criteria so that the qualitative presence and/or quantitation of that analyte in the sample cannot be determined with any degree of confidence.

Footnotes are applied to each qualifier to define the type of excursion that affected the sample result, resulting in the qualification of the data, as listed on this table.

Data are evaluated using the QA/QC criteria (including holding times and calibration) established in the applicable Quality Assurance Project Plan (QAPP), analytical methods and laboratory established control limits. Since the NJDEP validation guidelines apply to data generated using CLP methods, the application of these validation guidelines is modified to reflect method requirements, where applicable, since non-CLP methods are used in the analysis of samples.

A full QA/QC review is performed for 10 percent of the aqueous and solid samples, including a review of data summary forms and raw analytical data that were provided by the laboratory in the data package documentation. Partial review is performed for the remaining environmental samples submitted for data validation for this sampling event. Partial review consists of a review of the data summary forms. During the partial validation, only summary QA/QC forms are evaluated. The forms and the information contained on the forms are not evaluated for accuracy or completeness during the partial validation process.

The validation approach taken by O'Brien & Gere is a conservative one; qualifiers are applied to sample data to indicate both major and minor excursions. In this way, data associated with any type of excursion are identified to the data user. Major excursions will result in data being rejected, indicating that the data are considered unusable for either quantitative or qualitative purposes. Minor excursions will result in sample data being qualified as approximate that are otherwise usable for quantitative or qualitative purposes.

Excursions are subdivided into excursions that are within the laboratory's control and those that are out of the laboratory's control. Excursions involving laboratory control sample recovery, calibration response, method blank excursions, low or high spike recovery due to inaccurate spiking solutions or poor instrument response, holding times, interpretation errors, and quantitation errors are within the control of the laboratory. Excursions resulting from matrix spike recovery, serial dilution

# General Validation Approach

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Table 3 - O'Brien & Ger	re data validation approach using NJDEP data validation guidelines
	recovery, surrogate, and internal standard performance due to matrix interference from the matrix of the samples are examples of those excursions that are not within the laboratory's control if the laboratory has followed proper method control procedures, including performing appropriate cleanup techniques.
Parameter Type	Approach in Applying Data Validation Qualifiers
Sample collection information- Cooler Temperature	Results for samples submitted for organic and inorganic analyses impacted by cooler temperatures of greater than 10°C are noted in the report.* Qualifiers are not applied to data.
Sample collection information- Percent Solids	Results for samples submitted for organic and inorganic analyses that are impacted by percent solids of 50 percent are noted in the report.* Qualifiers are not applied to data.
	VOC target analytes are evaluated using the criteria of 20 percent relative standard deviation (%RSD) or correlation coefficient of 0.990 for initial calibration curves.
VOCs by USEPA	Calibration verifications are evaluated using a criterion of 20 percent difference (%D) for target analytes.
Method 8260C Calibration Evaluation	Initial calibrations and calibration verifications are also evaluated using the response factor (RF) criteria described in the method Table 4 for Method 8260C. The following exceptions are allowed: RFs ≥ 0.010 for poor purging target analytes such as ketones, acetonitrile, acrolein, propionitrile, vinyl acetate, 1,4-dioxane, alcohols, tetrahydrofuran, and cyclohexanone. Other target analytes not listed on Table 4 - RFs ≥ 0.050. ICV recoveries are evaluated using laboratory control limits if available or 70 to 130%.
SVOCs by USEPA Method 8270C Calibration Evaluation	SVOC target analytes are evaluated using the criteria of 15 %RSD or correlation coefficient criteria of 0.990 for initial calibration curves. Calibration verifications are evaluated using a criterion of 20%D for all target compounds. Initial calibrations and calibration verifications were also evaluated using the criterion of a RF value of greater than or equal to a value of 0.05 for the target analytes. If analyzed, the second-source standard (ICV) is evaluated using laboratory control limits or 70% to 130% recovery.
	Due to any relative standard deviation (RSD) calibration excursions, detected results for analytes in samples associated with the calibration are qualified as approximate (J). Non-detected results associated with RSD excursions may be qualified as approximate (UJ) based on professional judgment.
Calibration Actions for	If the RSD calibration excursion is greater than 90, detected results for analytes in samples associated with the calibration are qualified as approximate (J) and non-detected results may be rejected (R), applying professional judgment.
VOCs (8260C) and SVOCs (8270C)	Due to any %D calibration verification excursions, detected and non-detected results for analytes in samples associated with the calibration are qualified as approximate (J, UJ).
	If the %D calibration excursion is greater than 90, detected results for analytes in samples associated with the calibration are qualified as approximate (J) and non-detected results may be <u>rejected (R)</u> , applying professional judgment.
	For response factor excursions, detected results are qualified as approximate (J) and non-detected results are rejected (R). For 8260C, ketones and poor purging target analytes listed in Table 4 with RFs ≥ 0.010 and less than 0.100 results, data will be qualified as approximate (UJ, J).
	For initial calibration verifications (ICV) excursions, detected and non-detected results for analytes in samples associated with the calibration are qualified as approximate (J, UJ). The response direction and detection of target analytes in associated sample may be considered in applying qualifiers.
PCBs by USEPA Method 8082	PCB target analytes are evaluated using the criteria of 20 %RSD or correlation coefficient of 0.990 for initial calibration curves.
Calibration Evaluation	Calibration verifications are evaluated using a criterion of 15 %D for target analytes.

	ICV recoveries are avaluated using laboratory control limits if a validable as 70 to 4200/
	ICV recoveries are evaluated using laboratory control limits if available or 70 to 130%.
Pesticides by USEPA Method 8081A Calibration Evaluation	Pesticide target analytes are evaluated using the criteria of 20 %RSD or correlation coefficient of 0.990 for initial calibration curves.  Calibration verifications are evaluated using a criterion of 20 %D for the target analytes.  ICV recoveries are evaluated using laboratory control limits if available or 70 to 130%.
Herbicides by USEPA Method 8151A Calibration Evaluation	Herbicide target analytes are evaluated using the criteria of 20 %RSD or correlation coefficient of 0.990 for initial calibration curves.  Calibration verifications are evaluated using a criterion of 20 %D for the target analytes.  ICV recoveries are evaluated using laboratory control limits if available or 70 to 130%.
Calibration Actions for	Due to any relative standard deviation (RSD) calibration excursions, detected results for analytes in samples associated with the calibration are qualified as approximate (J). Non-detected results associated with RSD excursions may be qualified as approximate (UJ) based on professional judgment.
PCB, Pesticides and Herbicides GC analyses	Due to any %D calibration verification excursions, detected and non-detected results for analytes in samples associated with the calibration are qualified as approximate (J, UJ).
anaryses	For initial calibration verifications (ICV) excursions, detected and non-detected results for analytes in samples associated with the calibration are qualified as approximate (J, UJ). The response direction and detection of target analytes in associated sample may be considered in applying qualifiers.
Calibration Data- GC by USEPA Method 8011	Data are evaluated using the criteria of 20%RSD for initial calibrations, or correlation coefficient of 0.990 for calibration curves, and 20%D for the calibration verifications. Results are qualified for primary column calibration excursions. The second-source standard (ICV) is evaluated using laboratory control limits or 70% to 130% recovery.
Organic Multi-results	When two results are reported, due to re-preparation or for dilution analyses, both sets of results are evaluated during the validation process. Based on the evaluation of the associated quality control data, the results reflecting the higher quality data are reported.
	Laboratory established control limits are used to assess duplicate, surrogate, MS/MSD, and LCS data.
	In the case that excursions are identified in more than one quality control sample of the same matrix within one sample delivery group, samples are batched according to sample preparation or analysis date and qualified accordingly.
General Organic	For surrogate recoveries are not within laboratory control limits:  If two or more surrogate recoveries are outside of laboratory control limits for SVOC analysis, results are rejected (R, 81) unless matrix interferences are confirmed by re-extraction and reanalysis.  If one or more surrogate recoveries are not within laboratory control limits for PCB, results are qualified as UJ, J, 81B).
Surrogate, MS/MSD, LCS, Duplicate Data	If LCS percent recoveries are less than laboratory control limits but greater than ten percent, non-detected and detected results are qualified as approximate (UJ, J, 88) to indicate minor excursions.
	If LCS percent recoveries are greater than laboratory control limits, detected results are qualified as approximate (J, 88) to indicate minor excursions.
	If LCS percent recoveries are outside of laboratory control limits and less than ten percent, detected results are qualified as approximate (J, 88) and non-detected results are qualified as rejected (R, 88A) to indicate major excursions.
	If RPDs for MSDs or duplicates are outside of laboratory control limits, detected results are qualified as approximate (J, 89A) to indicate minor excursions.
Organic MS/MSD Data	Qualification of organic data for MS/MSD analyses is performed only when both MS and MSD percent recoveries are outside of laboratory control limits with zero percent recovery.
	Organic data are rejected (R, 87) to indicate major excursions in the case that both MS/MSD recoveries are zero.
Sample dilution Data	Qualification of data is not performed if MS/MSD or surrogate recoveries are outside of laboratory control limits due to sample dilution.

MS/MSD and Field Duplicate Data – Organic Data	Qualification of data associated with MS/MSD or field duplicate excursions is limited to the un-spiked sample or the field duplicate pair, respectively.
Field Duplicate Data	Field duplicate data are evaluated against relative percent difference (RPD) criteria of less than 50 percent for aqueous samples and less than 100 percent for soils when results are greater than five times the QL. When sample results for field duplicate pairs are less than five times the QL, the data are evaluated using control limits of plus or minus two times the QL for soils. If RPDs for field duplicates are outside of laboratory control limits, detected and non-detected results are qualified as approximate (UJ, J, 90) to indicate minor excursions.
Internal Standard -	Internal standard recoveries are evaluated using control limits of within 50% of the lower standard area and up to 100% of the upper standard area of the associated calibration verification standard.
Organic Data	Sample results are qualified as approximate (UJ, J, 50) if one internal standard does not meet criteria.  Detected sample results are qualified as approximate (J, 51) if two or more internal standards do not meet criteria.
Internal Standard/Surrogate - Organic Data- Drinking Water methods	Non-detected sample results are rejected (R, 51) if two or more internal standards do not meet criteria.  Internal standard recoveries are evaluated using method control limits. Monitor the integrated areas of the quantitation ions of the internal standards and surrogates in all samples, continuing calibration checks, and blanks. These should remain reasonably constant over time. An abrupt change may indicate a matrix effect or an instrument problem. If a cryogenic interface is utilized, it may indicate an inefficient transfer from the trap to the column. These samples must be reanalyzed or a laboratory fortified duplicate sample analyzed to test for matrix effect. A drift of more than 50% in any area is indicative of a loss in sensitivity, and the problem must be found and corrected.  CCV- Determine that the absolute areas of the quantitation ions of the internal standard and surrogates have not decreased by more than 30% from the areas measured in the most recent continuing calibration check, or by more than 50% from the areas measured during initial calibration. If these areas have decreased by more than these amounts, adjustments must be made to restore system sensitivity.
Evaluation of Internal Standards for samples (VOCs for USEPA Method 524.2)	Internal standard areas of samples are evaluated using the validation control limit of 70 to 130 percent recovery when compared to the calibration verification associated with the samples.  Sample results are qualified as approximate (UJ, J, 50) if one internal standard does not meet criteria.  Detected sample results are qualified as approximate (J, 51) if two or more internal standards do not meet criteria.  Non-detected sample results are rejected (R, 51) if two or more internal standards do not meet criteria.
Evaluation of CCVs (VOCs for USEPA Method 524.2)	Internal standard areas of CCVs are evaluated using the validation control limit of 50 to 100 percent recovery when compared to the initial calibration.  Sample results are qualified as approximate (UJ, J, 50) if one internal standard does not meet criteria.  Detected sample results are qualified as approximate (J, 51) if two or more internal standards do not meet criteria.  Non-detected sample results are rejected (R, 51) if two or more internal standards do not meet criteria.
Evaluation of Initial (ICV) and Calibration Verification (CCV) for Metals by 6010B/6020A,	Metals are evaluated using the criteria for ICV and CCV of 90% to 110% of the expected value.  Mercury is evaluated using the criteria for ICV of 90% to 110% of the expected value and 80% to 120% of the expected value for the CCV.
Mercury by 7470A/7471B, and Total Cyanide by 9012B	Total Cyanide is evaluated using the criteria for ICV and CCV of 85% to 115% of the expected value.  For analyses utilizing a calibration curve, the correlation coefficient for the first or second order curve must be ≥ 0.995.
Performance Evaluation for ICP-MS by 6020A	ICP-MS data is evaluated using resolution of mass calibration of within 0.1 μ and the %RSD of less than 15%.  Resolution must be less than 0.9amu of full width at 10% of peak height.

Evaluation of Initial (ICV) and Calibration Verification (CCV) for Metals by EPA method 200.7/200.8 and Anions by Method 300.0  Evaluation of Internal  Metals are evaluated using the criteria for ICV and CCV of 95% to 105% for EPA 200.7 and 300.0.  For analyses utilizing a calibration curve, the correlation coefficient for the first or second	
(ICV) and Calibration Verification (CCV) for Metals by EPA method 200.7/200.8 and Anions by Method 300.0  Evaluation of Internal	
Verification (CCV) for Metals by EPA method 200.7/200.8 and Anions by Method 300.0  Evaluation of Internal	
Metals by EPA method 200.7/200.8 and Anions by Method 300.0  For analyses utilizing a calibration curve, the correlation coefficient for the first or second	
200.7/200.8 and Anions by Method 300.0  Fivaluation of Internal	
Anions by Method 300.0  For analyses utilizing a calibration curve, the correlation coefficient for the first or second	
Anions by Method 300.0  Evaluation of Internal	order curve must be > 0.005
Evaluation of Internal	order curve must be 2 0.993.
Evaluation of Internal	
Standards for ICP-MS  Internal standard recoveries are evaluated using control limits of percent relative intensity	y (%RI) from 60% to 125% of the
by 200.8 response in the calibration blank.	
5 y 200.5	
Internal standard recoveries are evaluated using control limits of percent relative intensity	y (%RI) from 60% to 125% of the
response in the calibration blank.	
Evaluation of Internal  The intensity of any internal standard must be > 20% or <120% of the intensity of th	rnal standard in the initial
Standards for ICP-MS  The intensity of any internal standard must be >30% or <120% of the intensity of the i	mai standard in the initial
by 6020A	
The intensity of the internal standard of the CCB and CCV must agree within ±20% of the i	intensity of the internal standard in
the ICV.	,
Motel and Incorpora	
Metal and Inorganic  MS/MSD,	
L Qualification of sample results associated with MS/MSD, laboratory duplicate and field du	uplicate excursions is performed on
Laboratory/Field samples for the same matrix, within the same preparation batch, within the same SDG gro	oup.
Duplicate, Serial	
Dilution	
Validation Footnotes	
Footnote Type of Excursion	
The value reported is less than or equal to three (3) times the value in the method blank/prepara	
DPFSR to negate the reported value due to probable foreign contamination unrelated to the actu	•
alerted that a reportable quantity of the analyte/compound was detected. The B qualifier must be	•
The value reported is greater than three (3) times but less than or equal to 10 times the value in	
and is considered "real". However, the reported value must be quantitatively qualified "J" due to t	the method blank contamination. Th
"B" qualifier alerts the end-user to the presence of this analyte/compound in the method blank.	
The value reported is less than or equal to three (3) times the value in the trip/field blank. It is the	· · ·
reported value as due to probable foreign contamination unrelated to the actual sample. The	end-user, however, is alerted that
reportable quantity of the analyte/compound was detected.	
The value reported is greater than three (3) times the value in the trip/field blank but less than or e	
and is considered "real". However, the reported value must be quantitatively qualified "J" due to  4A The result was qualified due to negative drift.	trip/field blank contamination.
4B The result was qualified as "U" due to blank contamination.	
5 The concentration reported by the laboratory is incorrectly calculated.	
6 The laboratory failed to report the presence of the analyte in the sample.	
7 The reported metal value was qualified because the Initial/Continuing Calibration Standard was no	ot within the recovery range.
8 No CRDL Standard for AA or ICP analysis was performed. Therefore, the analyte affected was reje	ected.
The consideration of the constant of the const	e CRDL but greater than the MDL.
The reported concentration was quantitatively qualified because the concentration was below the	
The reported concentration was quantitatively qualified because the concentration was below the The concentration is considered estimated since the value obtained is at the low end of the instru	ment performance.
9 1 1	ment performance.
The concentration is considered estimated since the value obtained is at the low end of the instru	·
The concentration is considered estimated since the value obtained is at the low end of the instruction of t	he recovery range (80-120 percent).

12	This non-detected metal analyte had Laboratory Control Sample recovery that fell within the range of 70-79%. The end-user should be
12	aware of the possibility of false negatives; therefore, this analyte is flagged as estimated (UJ).
13	The reported metal value was qualified because the Laboratory Control Sample recovery fell within the range of 70-79 %. The enc
13	user should be aware of results that may be biased low.
14	The reported metal value was qualified because the Laboratory Control Sample recovery was greater than 120% but less than or equality than the reported metal value was qualified because the Laboratory Control Sample recovery was greater than 120% but less than or equality than the reported metal value was qualified because the Laboratory Control Sample recovery was greater than 120% but less than or equality than the reported metal value was qualified because the Laboratory Control Sample recovery was greater than 120% but less than or equality than the reported metal value was qualified because the Laboratory Control Sample recovery was greater than 120% but less than or equality than the reported metal value was qualified because the Laboratory Control Sample recovery was greater than 120% but less than or equality the reported metal value was qualified because the reported metal value was presented as the reported was p
14	to 130%. The end-user should be aware of results that may be biased high.
15	The metal analyte is rejected because the Laboratory Control Sample recovery was less than 70% or greater than 130%.
16	In the Duplicate Sample Analysis for metals, the analyte fell outside the control limits of +20 percent or + CRDL. Therefore, result for th metal was qualified.
17	This analyte was rejected because the laboratory performed the Duplicate Analysis on a field blank.
18	The reported metal value was qualified because the spike recovery was greater than 125 percent but less than or equal to 200%.
	The reported metal was qualified because both the spike recovery and matrix spike duplicate recovery were outside of the validation
18A	control limits.
19	The reported metal value was qualified because the spike recovery was between 25 and 74 percent.
	The reported metal value was qualified because the spike recovery was less than 25 percent. The reported value actually indicated the
20	minimum concentration at which the metal was present.
	The non-detected metal value was qualified (UJ) because the spike recovery was between 25 and 74 percent. The possibility of a fals
21	negative exists.
22	The non-detected metal value was rejected because the spike recovery was less than 25 percent.
23	The reported metal value was rejected because the laboratory used a field blank for the Sample Spike Analysis.
24	There was no Post-Digestion Spike Sample Recovery analysis performed. Therefore, the analyte was rejected.
25	The reported metal value was qualified because the Serial Dilution was not within ten percent of sample concentration.
	The reported metal value was rejected because the laboratory used a field blank for the Serial Dilution analysis or the post-digestion
26	spike.
	This metal analyte is rejected because the preparation blank concentration of this analyte is greater than the CRDL and the reporte
27	sample concentration is less than ten (10) times the preparation blank concentration.
28	The laboratory incorrectly transcribed the raw data onto the Inorganic Analysis Data Sheet form or there are data package issues.
28A	Verification of instrument parameters was performed outside of the required frequency.
28B	A percent solids issue was detected.
200	The reported metal analyte was rejected because the CRDL standard % Recovery fell less than 30% or was greater than 175%, or another
29	severe CRDL deficiency was detected.
30	The non-detected metal value was rejected because the post-digestion spike recovery was less than 25 percent.
30A	The metal value was qualified since the post-digestion spike recovery was exceeded.
31	The reported metal analyte was rejected because the associated Continuing Calibration Blank result was greater than the CRDL.
32	The reported metal analyte was rejected because this sample is not associated with a Laboratory Control Sample or ICB or CCB.
33	The laboratory made a transcription error.
33A	A methods comparison issue was detected.
34	The laboratory used an incorrectly associated Preparation Blank.
35	This analyte is rejected because the laboratory exceeded the holding time for analysis or extraction.
35A	Result was qualified due to a holding time excursion.
36	This metal value was qualified because the CRDL standard was not within the recovery range.
37	The reported concentration is quantitatively qualified due to calibration deficiencies.
38	The reported concentration is quantitatively qualified due to surrogate recovery outliers.
39	The reported concentration is quantitatively qualified because the concentration is below the RL.
33	
40	The sample holding time to re-extraction and/or reanalysis was exceeded. All positive results including the tentatively identifie compounds are highly qualified.
	The mass spectral identification has not been confirmed and the identification of this compound has been rejected. This compound
41	should now be considered an unknown and the reported concentration is considered an estimated value.
	The percent Difference of the calculated values on both columns is greater than 100% and less than 999.9 %. This value is significantly
	greater than the 25 % limits established by the USEPA-Contract Laboratory Program. The extreme variation between the values from the
42	
	two columns is apparently due to instrumentation problems and/or matrix interference. Therefore, the reported concentrations cannot

42B	The percent difference from both columns was greater than 40%.
42C	The percent difference from both columns was greater than 70%.
42D	The percent difference from both columns was greater than 100% without evidence of matrix interferences being present. The result are rejected (R).
42E	Results were reported at a concentration that was less than the PQL with a %D greater than 50 percent. The PQL is reported ar qualified as non-detected (U).
43	The peak retention times of the Aroclors or pesticides detected in the samples are outside of the retention time window established the initial calibration. The identification of the Aroclors or pesticides cannot be verified due to the retention time shift outside of the windows. Retention time shifts are evident in all of the continuing calibration standards and the Performance Evaluation Mixture therefore the usability of the data is questionable.
44	The laboratory didn't provide the mass spectral proof for the analyte although the quantitation report indicates the presence of the analyte. The presence of this analyte in the sample is considered tentative.
45	The non target compound is qualified "J" and considered an estimated value because relative response factors are not determined for non-target compounds.
46	The laboratory's call on the non target compound did not match the mass spectra of the compound at the approximate scan number the blank. The laboratory call is incorrect.
47	The laboratory failed to report this analyte on the Organic Analysis Data Sheet (OADS)
	Form even though the TIC, quantitation report and library search indicates a hit for the analyte.
48	The laboratory reported this analyte in the QADS form. However, this analyte was negated in the quantitation report. QA review agrees the mass spectrum is not a good match and therefore, negates the presence of this analyte in the sample.
49	
	No library search was submitted for this unknown.
19A	Results were rejected since correct internal standard was not used.
50	One internal standard area in the sample did not meet the QC criteria. Therefore, all compound results using this internal standard f quantitation are quantitatively estimated. (UJ, J)
51 (See 84)	Two or more internal standard areas in the sample did not meet the QC criteria with recoveries of greater than 25%. The detected results of the coveries of greater than 25%.
)1 (See 64)	for the entire fraction for that sample are qualified as approximate (J). The non-detected results are rejected (R).
52	The RIC in the raw data indicates a non-target(s) is present. The lab failed to report and provide library search(s) for the non-target(s).
53	The laboratory did not quantify the pesticides present in the sample. The pesticide was confirmed on a second column. Quantitation the peaks revealed that the value is above the CRQL.
54	The lab failed to report this analyte although it was found in both columns and is within the retention times of both columns for the analyte.
55	The retention time window for this analyte overlaps with the retention time window of another analyte. The identity is indistinguishab
	and therefore tentative.
56	The laboratory reported concentration does not agree with QA reviewer's calculated concentration.
57	The compound exceeded the calibration range of the instrument and is indicated with the "E" qualifier.
58	The compound is a suspected Aldol condensation product and is flagged with the "A" qualifier.
59	The laboratory was required to dilute the samples to bring the peaks onto scale.
60	This sample was diluted prior to analysis. The value reported prior to the dilution correction is less than three (3) times the value in the method blank. It is the policy of NJDEP-DPFSR to negate the reported value due to probable foreign laborato contamination unrelated to the actual sample. The end-user is alerted that a reportable quantity of the analyte was detected.
61	This non-target compound was detected as a target compound in another analytical fraction. Therefore, the presence of th compound as a non-target analyte is negated.
52	This sample was diluted prior to analysis. The value reported prior to the dilution correction is greater than three (3) times the value the method blank and is considered "real". However, the reported value must be quantitatively qualified "J" due to method bla contamination. The "B" qualifier alerts the end-user to the presence of this analyte in the method blank.
52A	Results are rejected due to a severe blank analysis excursion.
52B	Results are qualified due to a blank analysis excursion.
53	The results are rejected because the initial calibration, continuing calibration or internal standard was not performed using the proper sequence, concentration, matrix, or internal standards.
53A	Results are rejected due to a severe pesticide/Aroclor analysis issue.
53B	Results are negated due to a blank analysis excursion.
53C	Results are qualified due to a posticide/Aroclor analysis issue.
64	
J <del>4</del>	The results are rejected because the D of the single component pesticide and/or surrogate in the PEM(s) is greater than 25%.

Table 3 - O'B	rien & Gere data validation approach using NJDEP data validation guidelines
65	The results are rejected because of resolution, scaling, or retention time issues.
65A	Results are qualified due to scaling, or calibration issues.
66	The result is rejected due to retention time deficiencies.
67	The result is qualified because the DDT and/or Endrin breakdown was greater than 20%.
	The result is qualified because the combined DDT/Endrin breakdown is greater than
68	30%.
69	The results are rejected because GPC cleanup was not performed on the sample extract.
70	The results are rejected because florisil cleanup was not performed on the sample extract.
71	The results are rejected due to GPC calibration or analysis deficiencies.
	The results are rejected because the florisil cartridge check yielded unacceptable percent recoveries or was not performed
72	properly.
73	The sample holding time was exceeded by greater than ten days. The sample results are rejected.
	The GC/MS Instrument Performance Check Solution (IPCS) failed acceptance criteria or was not performed. The associated sample
74	results are rejected.
74A	The results are qualified due to IPCS time-of-analysis excursions.
	Three or more analytes in the initial calibration or continuing calibration failed to meet acceptance criteria. The associated sample
75	results are rejected.
	The results in the fraction are rejected because the response factor in the initial and/or continuing calibration is less than 0.01 or does
76	not meet the project requirement.
77	The results in the fraction are rejected because the %RSD and/or %D is greater than 40% (or in the case of %D, less than - 40%).
	The positive result is qualified because the RRF of the compound (with no %RSD or %D) is less than 0.01 or does not meet the
78	project requirement.
79	The non-detect result is rejected because the RRF of the compound (with no %RSD or %D) is less than 0.01.
	Five or more analytes in the initial calibration or continuing calibration failed to meet %RSD or %D and/or RRF acceptance criteria.
80	The associated sample results are rejected.
80A	Results are rejected since the continuing calibration was not performed properly.
81	Sample results for the fraction are rejected because the % recovery of two or more SMCs (or surrogates) failed to meet criteria.
81A	Results are rejected due to severe surrogate analysis excursions.
81B	Results are qualified due to surrogate analysis excursion.
	Sample results for the fraction are rejected because the %recovery of one or more SMCs (or surrogates) in the associated method
82	blank failed to meet criteria.
	Sample results for the fraction are rejected because the retention time of one or more internal standards deviated by more than +/-30
83	seconds from the retention time of the corresponding internal standard in the associated calibration standard.
	Two or more internal standard areas in the sample did not meet the QC criteria with recoveries of less than 25%. The detected
84	results and non-detected results are rejected (R).
84A	Results are qualified due to sulfur cleanup issue.
84B	Results are qualified due to internal standard failure.
	Sample results for the fraction are rejected because sulfur was present in the sample and sulfur cleanup was not performed or performed
85	properly.
86	Results are rejected due to failure to submit manual integration technique.
87	Results are rejected or qualified due to zero matrix spike/ matrix spike duplicate recoveries.
88	Results are qualified due to laboratory control sample excursions.
88A	Results are rejected due to laboratory control sample recoveries of less than ten percent.
89	Detected organic results are qualified due to zero matrix spike/matrix spike duplicate recoveries.
89A	Organic results are qualified due to matrix spike/matrix spike duplicate precision excursions.
90	Results are qualified due to field duplicate excursions. (UJ, J)
91	Results are qualified due to calibration excursions.
92	Results are rejected due to significant canister pressure differences.
93	Results are rejected due to significant canister pressure differences.  Results are rejected since SIM was utilized.
94	Results are rejected since a separate MDL study was not performed for each instrument.
95	Results are qualified due to analysis excursions.
96	Results are qualified due to a sample collection excursion.
96A	Results are rejected due to a sample collection excursion.  Results are rejected due to a sample collection excursion.
JUM	nesalis are rejected due to a sample collection excursion.

97	Results are qualified due to sample preparation excursion.
98	The reported hexavalent chromium result was qualified because the post verification spike was greater than 115%.
99	The reported hexavalent chromium result was qualified because the post verification spike was less than 85%
100	The non-detected hexavalent chromium result was qualified (UJ) because the post verification spike was less than 85%. The possibility of a false negative exists.
101	The reported hexavalent chromium result was qualified because the pre-digestion spike recovery was less than 75%.
102	The reported hexavalent chromium result was qualified because the pre-digestion spike recovery was greater than 125%.
103	The non-detected hexavalent chromium result was qualified because the pre-digestion spike recovery was less than 75%. The possibility of a false negative exists.
104	Results are qualified due to sample preservation excursion.
* Indicates th	nat NJDEP data validation guidelines do not address this situation; therefore, validation qualifiers are not applied to data.

QA/QC Term	Definition
Quantitation limit	The level above which numerical results may be obtained with a specified degree of confidence; the minimum concentration of an analyte in a specific matrix that can be identified and quantified above the method detection limit and within specified limits of precision and bias during routine analytical operating conditions.
Method detection limit	The minimum concentration of an analyte that undergoes preparation similar to the environmental samples and can be reported with a stated level of confidence that the analyte concentration is greater than zero.
Instrument detection limit	The lowest concentration of a metal target analyte that, when directly inputted and processed on a specific analytical instrument, produces a signal/response that is statistically distinct from the signal/response arising from equipment "noise" alone.
Gas chromatography/mass spectrometry (GC/MS) instrument performance check	Performed to verify mass resolution, identification, and to some degree, instrument sensitivity. These criteria are not sample specific; conformance is determined using standard materials.
Calibration	Compliance requirements for satisfactory instrument calibration are established to verify that the instrument capable of producing acceptable quantitative data. Initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of analysis and calibration verifications document satisfactory maintenance and adjustment of the instrument on a day-to-day basis.
Relative Response Factor	A measure of the relative mass spectral response of an analyte compared to its internal standard. Relative Response Factors are determined by analysis of standards and are used in the calculation of concentrations or analytes in samples.
Relative standard deviation	The standard deviation divided by the mean; a unit-free measure of variability.
Correlation coefficient	A measure of the strength of the relationship between two variables.
Relative Percent Difference	Used to compare two values; the relative percent difference is based on the mean of the two values, and is reported as an absolute value, i.e., always expressed as a positive number or zero.
Percent Difference	Used to compare two values; the percent difference indicates both the direction and the magnitude of the comparison, i.e., the percent difference may be either negative, positive, or zero.
Percent Recovery	The act of determining whether or not the methodology measures all of the target analytes contained in a sample.
Calibration blank	Consists of acids and reagent water used to prepare metal samples for analysis. This type of blank is analyzed to evaluate whether contamination is occurring during the preparation and analysis of the sample.
Method blank	A water or soil blank that undergoes the preparation procedures applied to a sample (i.e., extraction, digestion, clean-up). These samples are analyzed to examine whether sample preparation, clean-up, and analysis techniques result in sample contamination.
Field/equipment	Collected and submitted for laboratory analysis, where appropriate. Field/equipment blanks are handled in the same manner as environmental samples. Equipment/field blanks are analyzed to assess contamination introduced during field sampling procedures.
Trip blank	Consist of samples of analyte-free water that have undergone shipment from the sampling site to the laboratory in coolers with the environmental samples submitted for volatile organic compound (VOC) analysis Trip blanks will be analyzed for VOCs to determine if contamination has taken place during sample handling and/or shipment. Trip blanks will be utilized at a frequency of one each per cooler sent to the laboratory for VOC analysis.
Internal standards performance	Compounds not found in environmental samples which are spiked into samples and quality control samples a the time of sample preparation for organic analyses. Internal standards must meet retention time and recovery criteria specified in the analytical method. Internal standards are used as the basis for quantitation of the target analytes.
Surrogate recovery	Compounds similar in nature to the target analytes but not expected to be detected in the environmental media which are spiked into environmental samples, blanks, and quality control samples prior to sample preparation for organic analyses. Surrogates are used to evaluate analytical efficiency by measuring recovery
Laboratory control sample Matrix spike blank analyses	Standard solutions that consist of known concentrations of the target analytes spiked into laboratory analyte-free water or sand. They are prepared or purchased from a certified manufacturer from a source independent from the calibration standards to provide an independent verification of the calibration procedure. They are prepared and analyzed following the same procedures employed for environmental sample analysis to assess method accuracy independently of sample matrix effects.
Laboratory duplicate	Two or more representative portions taken from one homogeneous sample by the analyst and analyzed in the same laboratory.
Matrix	The material of which the sample is composed or the substrate containing the analyte of interest, such as drinking water, waste water, air, soil/sediment, biological material.
Matrix Spike (MS)	An aliquot of a matrix (water or soil) fortified (spiked) with known quantities of specific target analytes and subjected to the entire analytical procedure in order to indicate the appropriateness of the method for the matrix by measuring recovery.
Matrix spike duplicate (MSD)	A second aliquot of the same matrix as the matrix spike that is spiked in order to determine the precision of the method.

Table 4. Laboratory QA/QC analyses definitions.		
Retention time	The time a target analyte is retained on a GC column before elution. The identification of a target analyte is dependent on a target compound's retention time falling within the specified retention time window established for that compound.	
Relative retention time	The ratio of the retention time of a compound to that of a standard.	
Source O'Brien & Gere		